US009486615B2

(12) **United States Patent**
Ignon et al.

(10) **Patent No.: US 9,486,615 B2**
(45) **Date of Patent: *Nov. 8, 2016**

(54) **MICRODERMABRASION APPARATUS AND METHOD**

(75) Inventors: **Roger Ignon**, Redondo Beach, CA (US); **Ed F. Nicolas**, Wilmington, CA (US)

(73) Assignee: **Edge Systems LLC**, Signal Hill, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 595 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **13/620,376**

(22) Filed: **Sep. 14, 2012**

(65) **Prior Publication Data**

US 2013/0102978 A1 Apr. 25, 2013

Related U.S. Application Data

(63) Continuation of application No. 12/346,582, filed on Dec. 30, 2008, now Pat. No. 8,343,116.

(60) Provisional application No. 61/019,196, filed on Jan. 4, 2008, provisional application No. 61/022,201, filed on Jan. 18, 2008.

(51) **Int. Cl.**
A61M 35/00 (2006.01)
A61B 17/3205 (2006.01)

(52) **U.S. Cl.**
CPC ***A61M 35/003*** (2013.01)

(58) **Field of Classification Search**
USPC 606/9, 131
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,608,032	A	8/1952	Garver	
2,631,583	A *	3/1953	Lavergne	A61H 9/005 15/321
2,701,559	A	2/1955	Cooper	
2,712,823	A	7/1955	Kurtin	
2,867,214	A	1/1959	Wilson	
2,881,763	A	4/1959	Robbins	
2,921,585	A	1/1960	Schumann	
3,085,573	A	4/1963	Meyer et al.	
3,214,869	A	11/1965	Stryker	
3,476,112	A	11/1969	Elstein	

(Continued)

FOREIGN PATENT DOCUMENTS

DE	34 21 390 A1	12/1985
DE	234 608	4/1986

(Continued)

OTHER PUBLICATIONS

International Search Report for PCT/US2008/088576 (the corresponding PCT of the subject application), mailed Feb. 19, 2009.

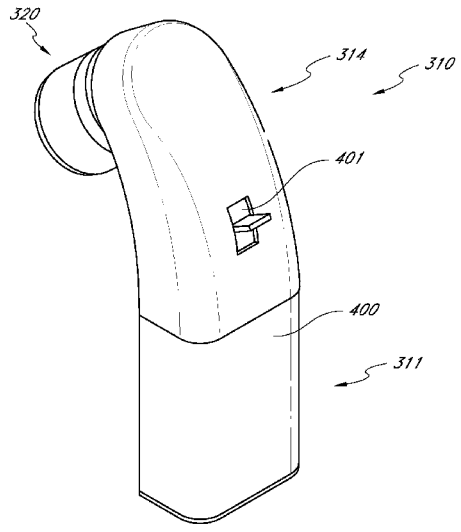
(Continued)

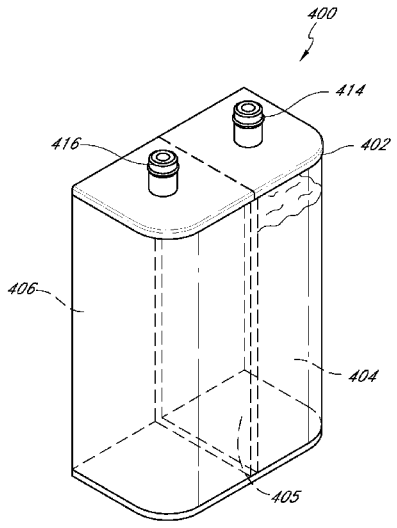
Primary Examiner — Paula L. Craig
(74) *Attorney, Agent, or Firm* — Knobbe, Martens, Olson & Bear, LLP

(57) **ABSTRACT**

According to some embodiments, a system for treating skin includes a handpiece assembly comprising a tip and a main body portion, the main body portion comprising an interior cavity and at least one canister configured to store at least one of a treatment material and a waste material. The treatment material and/or the waste material is in fluid communication with the tip.

20 Claims, 17 Drawing Sheets





(56) **References Cited**

U.S. PATENT DOCUMENTS

3,574,239	A *	4/1971	Sollerud	4/616
3,715,838	A	2/1973	Young et al.	
3,865,352	A	2/1975	Nelson et al.	
3,948,265	A	4/1976	Al Ani	
3,964,212	A	6/1976	Karden	
3,977,084	A	8/1976	Sloan	
4,121,388	A	10/1978	Wilson	
4,155,721	A	5/1979	Fletcher	
4,170,821	A *	10/1979	Booth	B05D 5/08 30/41
4,182,329	A	1/1980	Smit et al.	
4,203,431	A	5/1980	Abura et al.	
4,216,233	A	8/1980	Stein	
4,299,219	A	11/1981	Norris, Jr.	
4,378,804	A	4/1983	Cortese	
4,560,373	A	12/1985	Sugino et al.	
4,646,480	A	3/1987	Williams	
4,646,482	A	3/1987	Chitjian	
4,655,743	A	4/1987	Hyde	
4,676,749	A	6/1987	Mabille	
4,706,676	A	11/1987	Peck	
4,754,756	A	7/1988	Shelanski	
4,757,814	A	7/1988	Wang et al.	
4,764,362	A	8/1988	Barchas	
4,795,421	A	1/1989	Blasius, Jr. et al.	
4,875,287	A	10/1989	Creasy et al.	
4,886,078	A	12/1989	Shiffman	
4,887,994	A	12/1989	Bedford	
4,900,316	A	2/1990	Yamamoto	
4,917,086	A	4/1990	Feltovich et al.	
4,925,450	A	5/1990	Imonti et al.	
4,957,747	A	9/1990	Stiefel	
5,006,004	A	4/1991	Dirksing et al.	
5,006,339	A	4/1991	Bargery et al.	
5,012,797	A	5/1991	Liang et al.	
5,035,089	A	7/1991	Tillman et al.	
5,037,431	A	8/1991	Summers et al.	
5,037,432	A *	8/1991	Molinari	606/131
5,100,412	A	3/1992	Rosso	
5,100,424	A	3/1992	Jang et al.	
5,119,839	A	6/1992	Rudolph	
5,122,153	A	6/1992	Harrel	
5,207,234	A	5/1993	Rosso	
5,222,956	A	6/1993	Waldron	
5,242,433	A	9/1993	Smith et al.	
5,254,109	A	10/1993	Smith et al.	
5,368,581	A	11/1994	Smith et al.	
5,391,151	A	2/1995	Wilmot	
5,417,674	A	5/1995	Smith et al.	
5,419,772	A	5/1995	Teitz et al.	
5,460,620	A	10/1995	Smith et al.	
5,470,323	A	11/1995	Smith et al.	
5,484,427	A	1/1996	Gibbons	
5,562,642	A	10/1996	Smith et al.	
5,611,687	A	3/1997	Wagner	
5,612,797	A	3/1997	Liang et al.	
5,674,235	A	10/1997	Parisi	
5,676,643	A	10/1997	Cann et al.	
5,676,648	A	10/1997	Henley	
5,683,971	A	11/1997	Rose et al.	
5,697,920	A *	12/1997	Gibbons	604/289
5,707,383	A	1/1998	Bays	
5,713,785	A	2/1998	Nishio	
5,735,833	A *	4/1998	Olson	604/289
5,759,185	A	6/1998	Grinberg	
5,779,519	A	7/1998	Oliver	
5,800,446	A	9/1998	Banuchi	
5,807,353	A	9/1998	Schmitz	
5,810,842	A	9/1998	Di Fiore et al.	
5,813,416	A	9/1998	Rudolph	
5,817,050	A	10/1998	Klein	
5,846,215	A	12/1998	Zygmont	
5,848,998	A	12/1998	Marasco, Jr.	
5,861,142	A	1/1999	Schick	
5,873,881	A	2/1999	McEwen et al.	
5,879,323	A	3/1999	Henley	
5,882,201	A	3/1999	Salem	
5,885,260	A	3/1999	Mehl, Sr. et al.	
5,908,401	A	6/1999	Henley	
5,919,152	A	7/1999	Zygmont	
5,954,730	A	9/1999	Bernabei	
5,971,999	A	10/1999	Naldoni	
5,980,555	A	11/1999	Barbut et al.	
6,019,749	A	2/2000	Fields et al.	
6,024,733	A	2/2000	Eggers et al.	
6,027,402	A	2/2000	Oliver	
6,039,745	A	3/2000	Di Fiore et al.	
6,042,552	A	3/2000	Cornier	
6,080,165	A *	6/2000	DeJacma	606/131
6,080,166	A	6/2000	McEwen et al.	
6,090,085	A	7/2000	Mehl, Sr. et al.	
6,120,512	A	9/2000	Bernabei	
6,129,701	A	10/2000	Cimino	
6,136,008	A	10/2000	Becker et al.	
6,139,553	A	10/2000	Dotan	
6,139,554	A	10/2000	Karkar et al.	
6,142,155	A	11/2000	Rudolph	
6,149,634	A	11/2000	Bernabei	
6,159,226	A	12/2000	Kim	
6,162,218	A *	12/2000	Elbrecht et al.	606/41
6,162,232	A *	12/2000	Shadduck	606/131
6,183,451	B1	2/2001	Mehl, Sr. et al.	
6,183,483	B1	2/2001	Chang	
6,193,589	B1	2/2001	Khalaj	
6,231,593	B1	5/2001	Meserol	
6,235,039	B1 *	5/2001	Parkin et al.	606/131
6,238,275	B1	5/2001	Metcalf et al.	
6,241,739	B1	6/2001	Waldron	
6,264,666	B1	7/2001	Coleman et al.	
6,277,128	B1	8/2001	Muldner	
6,283,978	B1	9/2001	Cheski et al.	
6,299,620	B1 *	10/2001	Shadduck et al.	606/131
6,306,119	B1	10/2001	Weber et al.	
6,306,147	B1	10/2001	Bernabei et al.	
6,322,568	B1	11/2001	Bernabei et al.	
6,368,333	B2 *	4/2002	Bernabei et al.	606/131
6,387,103	B2	5/2002	Shadduck	
6,409,736	B1	6/2002	Bernabei	
6,410,599	B1	6/2002	Johnson	
RE37,796	E	7/2002	Henley	
6,414,032	B1	7/2002	Johnson	
6,420,431	B1	7/2002	Johnson	
6,423,078	B1	7/2002	Bays et al.	
6,423,750	B1	7/2002	Johnson	
6,432,113	B1	8/2002	Parkin et al.	
6,432,114	B1	8/2002	Rosso	
6,471,712	B2	10/2002	Burres	
6,477,410	B1	11/2002	Henley et al.	
6,482,212	B1	11/2002	Bernabei et al.	
6,488,646	B1	12/2002	Zygmont	
6,494,856	B1	12/2002	Zygmont	
6,500,183	B1 *	12/2002	Waldron	606/131
6,503,256	B2	1/2003	Parkin et al.	
6,511,486	B2 *	1/2003	Mercier et al.	606/131
6,514,262	B1	2/2003	Di Fiore et al.	
6,527,783	B1 *	3/2003	Ignon	606/131
6,535,761	B2	3/2003	Bernabei	
6,540,757	B1 *	4/2003	Hruska et al.	606/131
6,562,013	B1	5/2003	Marasco, Jr.	
6,562,050	B1	5/2003	Owen	
6,564,093	B1	5/2003	Ostrow et al.	
6,565,535	B2	5/2003	Zaias et al.	
6,582,442	B2	6/2003	Simon et al.	
6,589,218	B2 *	7/2003	Garcia	604/313
6,592,595	B1	7/2003	Mallett et al.	
6,629,983	B1	10/2003	Ignon	
6,641,591	B1	11/2003	Shadduck	
6,645,184	B1	11/2003	Zelickson et al.	
6,652,888	B2	11/2003	Rhoades	
6,673,081	B1	1/2004	Tavger et al.	
6,673,082	B2	1/2004	Mallett et al.	
6,685,853	B1	2/2004	Angelopoulos et al.	
6,687,537	B2	2/2004	Bernabei	
6,695,853	B2	2/2004	Karasiuk	

(56) **References Cited**

U.S. PATENT DOCUMENTS

6,735,470 B2 5/2004 Henley et al.
6,743,211 B1 6/2004 Prausnitz et al.
6,743,215 B2 6/2004 Bernabei
6,764,493 B1 7/2004 Weber et al.
6,869,611 B1 3/2005 Kligman et al.
6,905,487 B2 6/2005 Zimmerman
6,911,031 B2 6/2005 Muldner
6,924,649 B2 8/2005 Knoedgen
6,926,681 B1 8/2005 Ramey et al.
6,942,649 B2 9/2005 Ignon et al.
7,001,355 B2 2/2006 Nunomura et al.
7,004,933 B2 2/2006 McDaniel
7,044,938 B2 5/2006 La Bianco et al.
7,052,503 B2 5/2006 Bernabei
7,069,073 B2 6/2006 Henley et al.
7,070,488 B2 7/2006 Suissa et al.
7,083,580 B2 8/2006 Bernabei
7,087,063 B2 8/2006 Carson et al.
7,094,252 B2 8/2006 Koop
7,115,275 B2 10/2006 Clarot et al.
7,135,011 B2 11/2006 Powers et al.
7,153,311 B2 12/2006 Chung
7,197,359 B1 3/2007 Tokudome et al.
7,198,623 B2 4/2007 Fischer et al.
7,232,444 B2 6/2007 Chang
7,241,208 B2 7/2007 Suissa et al.
7,276,051 B1 10/2007 Henley et al.
7,314,326 B2 1/2008 Rosenberg
7,316,657 B2 1/2008 Kleinhenz et al.
7,318,828 B1 1/2008 Revivo
7,320,691 B2 1/2008 Pilcher et al.
7,320,801 B2 1/2008 Kelly
7,354,423 B2 4/2008 Zelickson et al.
7,364,565 B2 4/2008 Freeman
7,384,405 B2 6/2008 Rhoades
7,427,273 B2 9/2008 Mitsui
7,458,944 B2 12/2008 Liste et al.
7,476,205 B2 1/2009 Erdmann
7,477,938 B2 1/2009 Sun et al.
7,482,314 B2 1/2009 Grimes et al.
7,489,989 B2 2/2009 Sukhanov et al.
7,507,228 B2 3/2009 Sun et al.
7,582,067 B2 9/2009 Van Acker
7,597,900 B2 10/2009 Zimmer et al.
7,597,901 B2 10/2009 Clarot et al.
7,658,742 B2 2/2010 Karasiuk
7,678,120 B2 3/2010 Shadduck
7,744,582 B2 6/2010 Sadowski et al.
7,789,886 B2 9/2010 Shadduck
7,837,695 B2 11/2010 Hart et al.
7,901,373 B2 3/2011 Tavger
7,951,156 B2 5/2011 Karasiuk
8,025,669 B1 9/2011 David et al.
RE42,960 E 11/2011 Waldron
8,048,089 B2 11/2011 Ignon et al.
8,066,716 B2 11/2011 Shadduck
8,088,085 B2 1/2012 Thiebaut et al.
8,128,638 B2 3/2012 Karasiuk et al.
8,221,437 B2 7/2012 Waldron et al.
8,236,008 B2 8/2012 Boone, III et al.
8,277,287 B2 10/2012 Hart
8,337,513 B2 12/2012 Shadduck
8,343,116 B2 * 1/2013 Ignon et al. 604/289
8,814,836 B2 * 8/2014 Ignon et al. 604/289
9,056,193 B2 6/2015 Ignon et al.
2001/0023351 A1 9/2001 Eilers
2001/0049511 A1 12/2001 Coleman et al.
2002/0016601 A1 2/2002 Shadduck
2002/0041891 A1 4/2002 Cheski
2002/0058952 A1 * 5/2002 Weber et al. 606/131
2002/0107527 A1 8/2002 Burres
2002/0133110 A1 9/2002 Citow
2002/0133176 A1 * 9/2002 Parkin et al. 606/131
2002/0151826 A1 10/2002 Ramey et al.
2002/0151908 A1 10/2002 Mallett, Sr.
2002/0188261 A1 * 12/2002 Hruska 604/289
2003/0012415 A1 1/2003 Cossel
2003/0018252 A1 1/2003 Duchon et al.
2003/0060834 A1 3/2003 Muldner
2003/0093040 A1 5/2003 Mikszta et al.
2003/0093089 A1 5/2003 Greenberg
2003/0097139 A1 5/2003 Karasiuk
2003/0167032 A1 9/2003 Ignon
2003/0187462 A1 10/2003 Chang
2003/0208159 A1 * 11/2003 Ignon et al. 604/140
2003/0212127 A1 11/2003 Glassman et al.
2003/0212415 A1 11/2003 Karasiuk
2004/0010222 A1 1/2004 Nunomura et al.
2004/0010269 A1 1/2004 Grimes et al.
2004/0087972 A1 5/2004 Mulholland et al.
2004/0092895 A1 5/2004 Harmon
2004/0092959 A1 5/2004 Bernaz
2004/0097967 A1 5/2004 Ignon
2004/0122447 A1 6/2004 Harmon et al.
2004/0143274 A1 7/2004 Shadduck
2004/0162565 A1 8/2004 Carson et al.
2004/0166172 A1 8/2004 Rosati et al.
2004/0219179 A1 11/2004 McDaniel
2004/0236291 A1 11/2004 Zelickson et al.
2004/0243149 A1 * 12/2004 Lee, Jr. 606/131
2004/0254587 A1 12/2004 Park
2004/0267285 A1 * 12/2004 Chang 606/131
2005/0037034 A1 2/2005 Rhoades
2005/0038448 A1 2/2005 Chung
2005/0059940 A1 3/2005 Weber et al.
2005/0084509 A1 4/2005 Bernstein
2005/0148958 A1 7/2005 Rucinski
2005/0203111 A1 9/2005 David
2005/0209611 A1 9/2005 Greenberg
2005/0283176 A1 12/2005 Law
2006/0002960 A1 1/2006 Zoeteweij et al.
2006/0116674 A1 6/2006 Goble et al.
2006/0161178 A1 * 7/2006 Lee 606/131
2006/0189964 A1 8/2006 Anderson et al.
2006/0191562 A1 8/2006 Nunomura
2006/0200099 A1 9/2006 La Bianco et al.
2006/0200172 A1 9/2006 Shadduck
2006/0200173 A1 9/2006 Shadduck
2006/0212029 A1 9/2006 Arcusa Villacampa et al.
2006/0253125 A1 11/2006 Ignon
2006/0264893 A1 11/2006 Sage, Jr. et al.
2007/0005078 A1 1/2007 Hart et al.
2007/0043382 A1 2/2007 Cheney
2007/0065515 A1 3/2007 Key
2007/0088371 A1 * 4/2007 Karasiuk 606/131
2007/0123808 A1 5/2007 Rhoades
2007/0154502 A1 7/2007 Hattendorf et al.
2007/0156124 A1 * 7/2007 Ignon et al. 606/9
2007/0178121 A1 8/2007 First et al.
2007/0198031 A1 8/2007 Kellogg
2007/0208353 A1 9/2007 Shadduck
2007/0239173 A1 10/2007 Khalaj
2008/0027328 A1 * 1/2008 Klopotek et al. 600/472
2008/0091179 A1 4/2008 Durkin et al.
2008/0103563 A1 5/2008 Powell
2008/0119781 A1 5/2008 King
2008/0132914 A1 6/2008 Bossard et al.
2008/0139974 A1 6/2008 Da Silva
2008/0154161 A1 6/2008 Abbott
2008/0193493 A1 8/2008 Rhoades
2008/0200861 A1 8/2008 Shalev et al.
2008/0208146 A1 8/2008 Brandwein et al.
2008/0214987 A1 9/2008 Xu
2008/0215068 A1 9/2008 Hart et al.
2008/0221548 A1 9/2008 Danenberg et al.
2008/0243039 A1 10/2008 Rhoades
2008/0287864 A1 11/2008 Rosenberg
2008/0300529 A1 12/2008 Reinstein
2008/0300552 A1 12/2008 Cichocki et al.
2009/0048557 A1 2/2009 Yeshurun et al.
2009/0053390 A1 2/2009 Sakou et al.
2009/0062815 A1 * 3/2009 Karasiuk A45D 34/04 606/131
2009/0099091 A1 4/2009 Hantash

(56) **References Cited**

U.S. PATENT DOCUMENTS

2009/0099093	A1	4/2009	Hantash	
2009/0124985	A1	5/2009	Hasenoehrl et al.	
2009/0138026	A1	5/2009	Wu	
2009/0177171	A1	7/2009	Ignon et al.	
2009/0192442	A1*	7/2009	Ignon et al.	604/22
2009/0222023	A1	9/2009	Boone, III et al.	
2010/0045427	A1	2/2010	Boone, III et al.	
2010/0049177	A1	2/2010	Boone, III et al.	
2010/0049210	A1	2/2010	Boone, III et al.	
2010/0217357	A1	8/2010	Da Silva	
2011/0054490	A1	3/2011	Hart	
2011/0066162	A1	3/2011	Cohen	
2011/0082415	A1	4/2011	Ignon et al.	
2012/0022435	A1	1/2012	Ignon et al.	
2012/0041338	A1	2/2012	Chickering, III et al.	
2012/0136374	A1	5/2012	Karasiuk	
2013/0018317	A1	1/2013	Bobroff et al.	
2013/0066336	A1	3/2013	Boone, III et al.	
2013/0096577	A1	4/2013	Shadduck	
2013/0102978	A1	4/2013	Ignon et al.	
2013/0144280	A1	6/2013	Eckhouse et al.	
2013/0158547	A1*	6/2013	David	606/41
2014/0343481	A1	11/2014	Ignon	
2014/0343574	A1	11/2014	Ignon et al.	
2015/0032047	A1	1/2015	Ignon et al.	
2015/0230824	A1	8/2015	Shadduck	
2015/0230825	A1	8/2015	Shadduck	
2015/0231379	A1	8/2015	Ignon et al.	
2015/0265822	A1	9/2015	Ignon et al.	
2015/0272623	A1	10/2015	Ignon et al.	
2015/0290442	A1	10/2015	Ignon et al.	
2016/0038183	A1	2/2016	Ignon et al.	

FOREIGN PATENT DOCUMENTS

DE	10 2004 01581 A1	11/2005
EP	0 258 901	9/1987
EP	0 564 392	3/1993
IT	553 076	12/1956
IT	118 49 22	3/1985
JP	1993-088552	12/1993
JP	1997-294747	11/1997
JP	2003-339713	12/2003
JP	2006-503627	2/2006
JP	2006-204767	10/2006
KR	20-0280320	7/2002
WO	WO 00/15300	3/2000
WO	WO 01/93931	12/2001
WO	WO 03/073917	9/2003
WO	WO 2004/037098	5/2004
WO	WO 2005/070313	8/2005
WO	WO 2006/018731	2/2006
WO	WO 2007/114904	10/2007
WO	WO 2012/145667	10/2012

OTHER PUBLICATIONS

Cox III et al., *Decreased Splatter in Dermabrasion*, Arch Facial Plastic Surgery, Jan.-Mar. 2000, vol. 2, pp. 23-26.

Ditre et al., *Effect of α-hydroxy acids on photoaged skin: A pilot clinical, histologic, and ultrastructural study*, Journal of American Academy of Dermatology, Feb. 1996, vol. 34, No. 2, Part 1, pp. 187-195.

Harris et al., *Combining Manual Dermasanding with Low Stregnth Trichloroacetic Acid to Improve Antinically Injured Skin*, The Journal of Dermatologic Surgery and Oncology, Jul. 1994, vol. 20, No. 7, pp. 436-442.

* cited by examiner

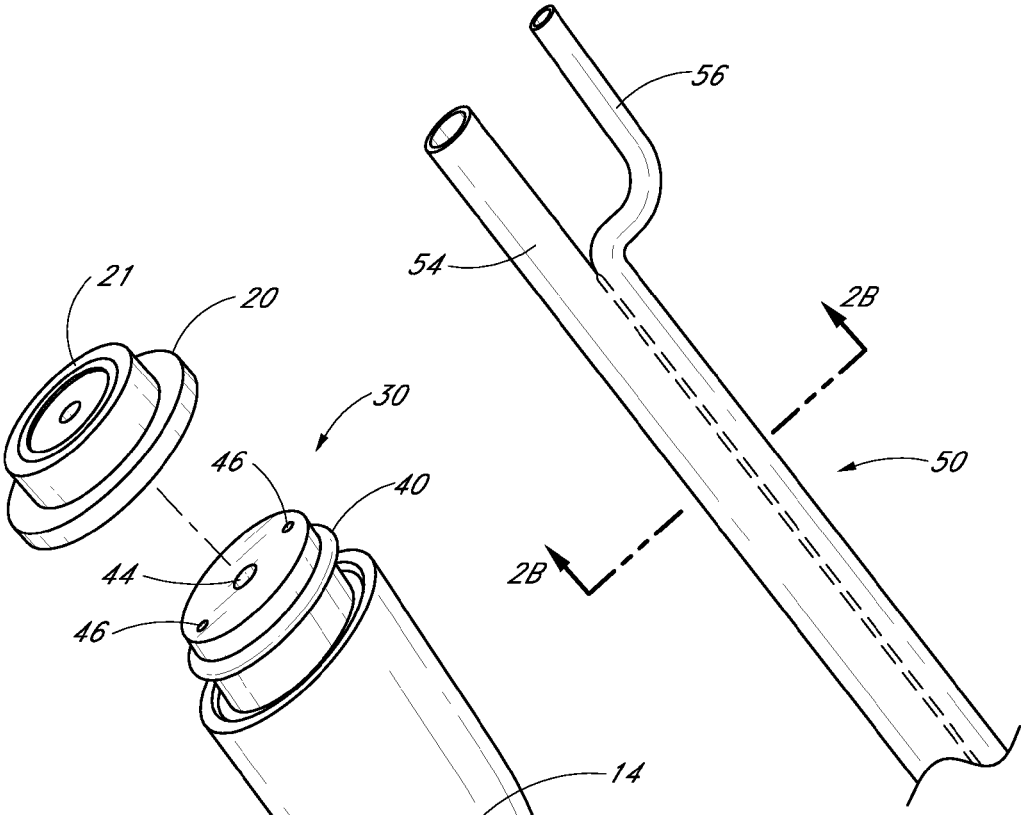


FIG. 2A

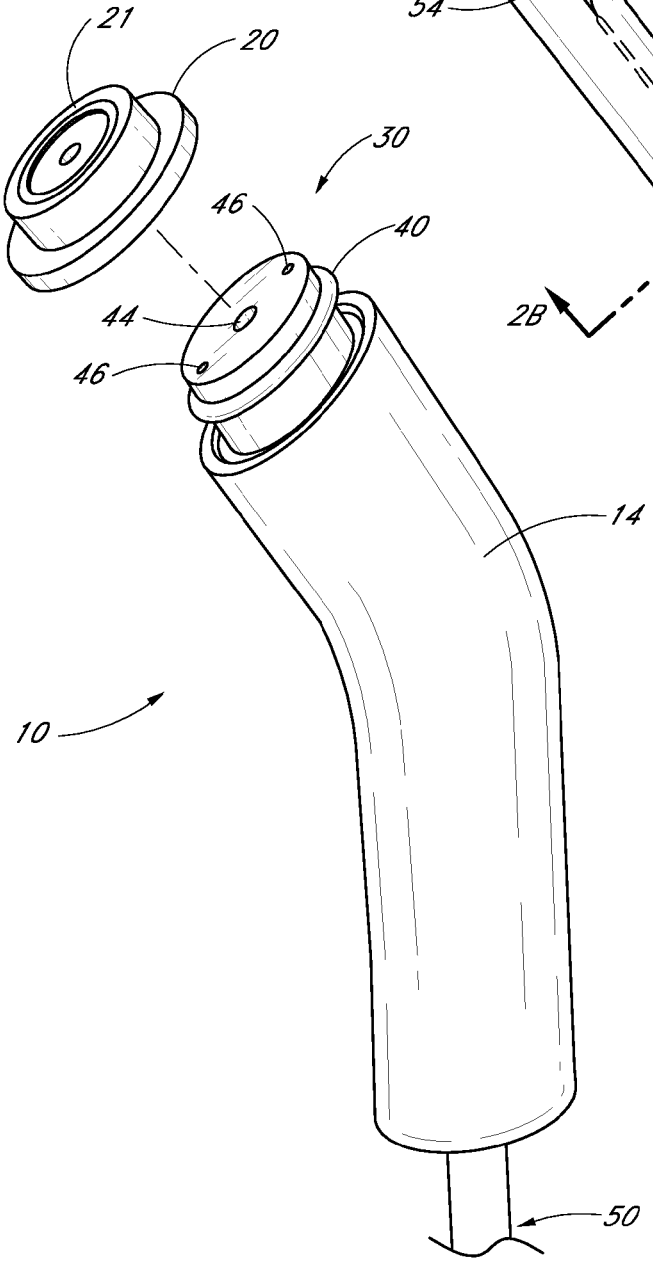


FIG. 1

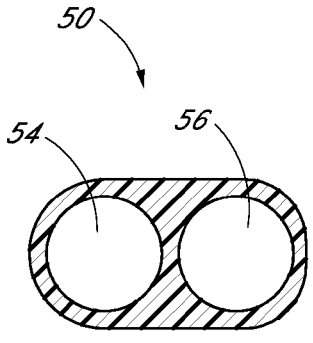


FIG. 2B

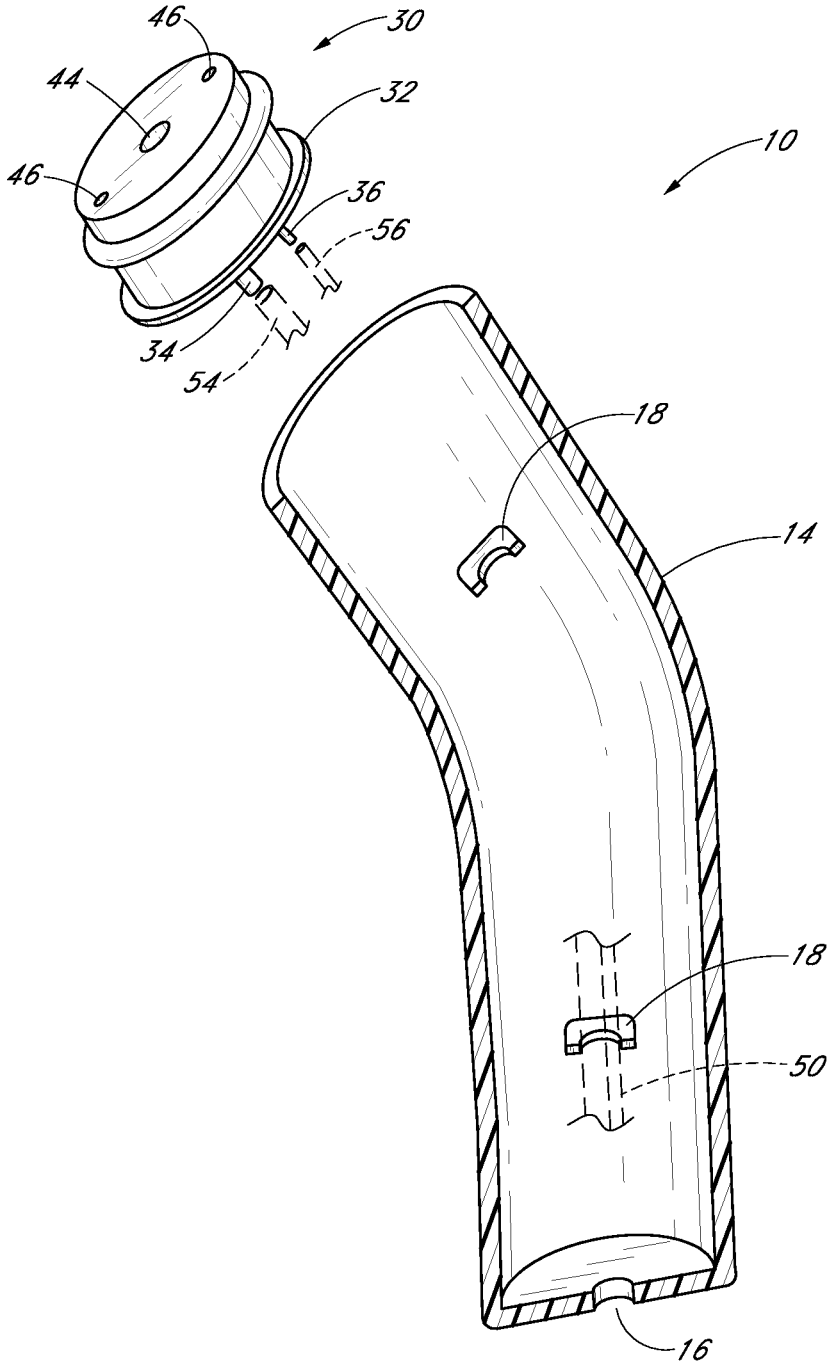


FIG. 3

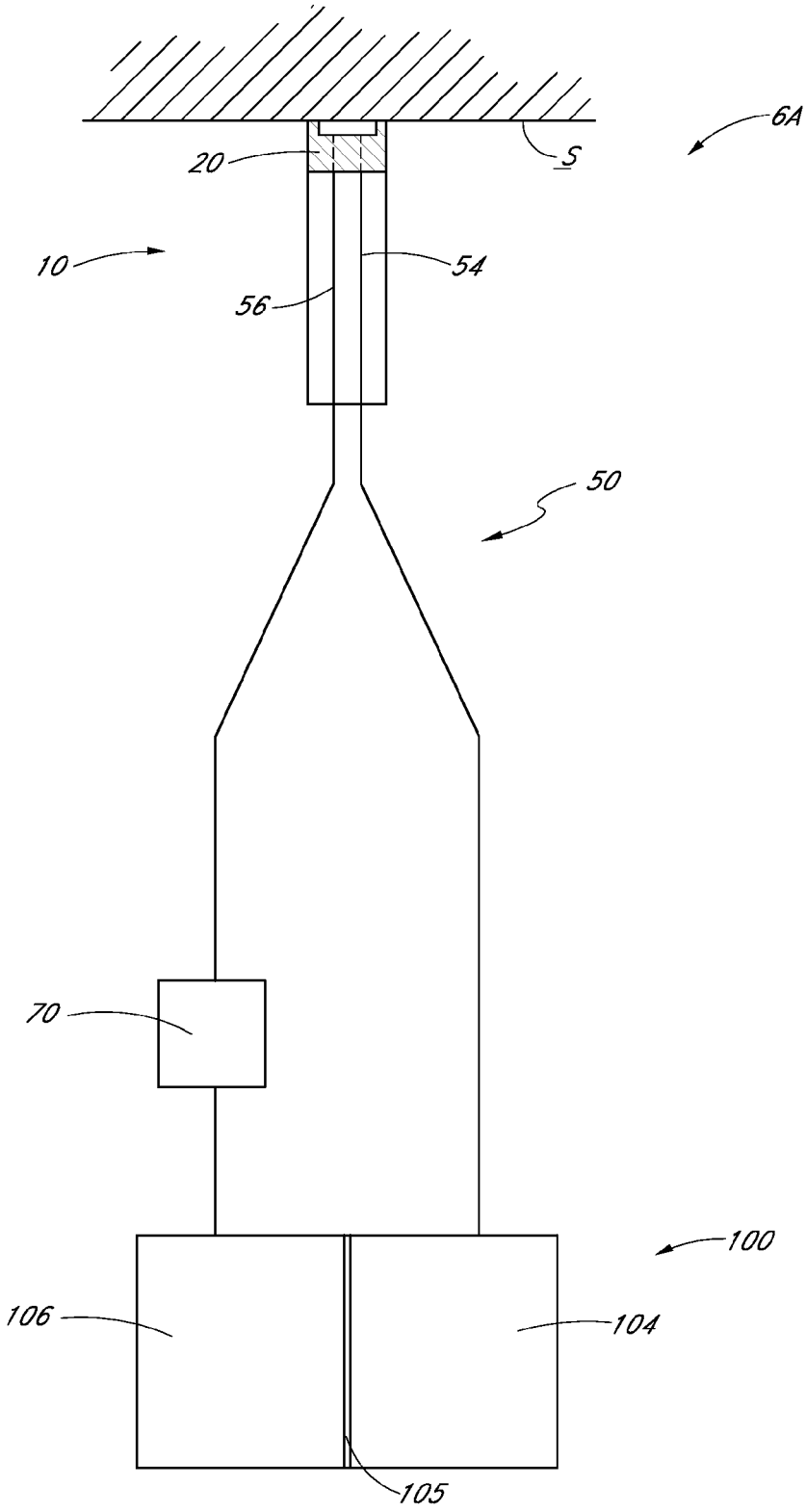


FIG. 4

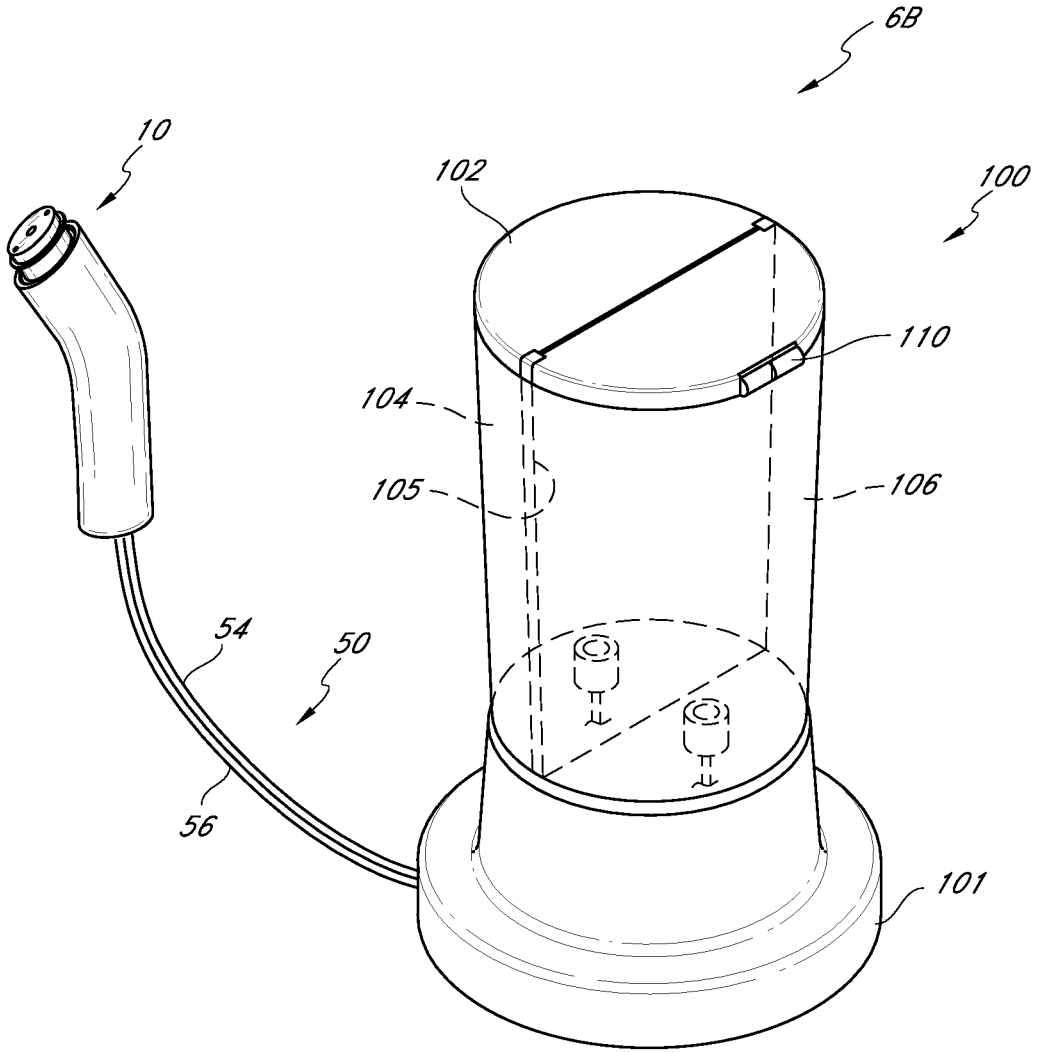


FIG. 5

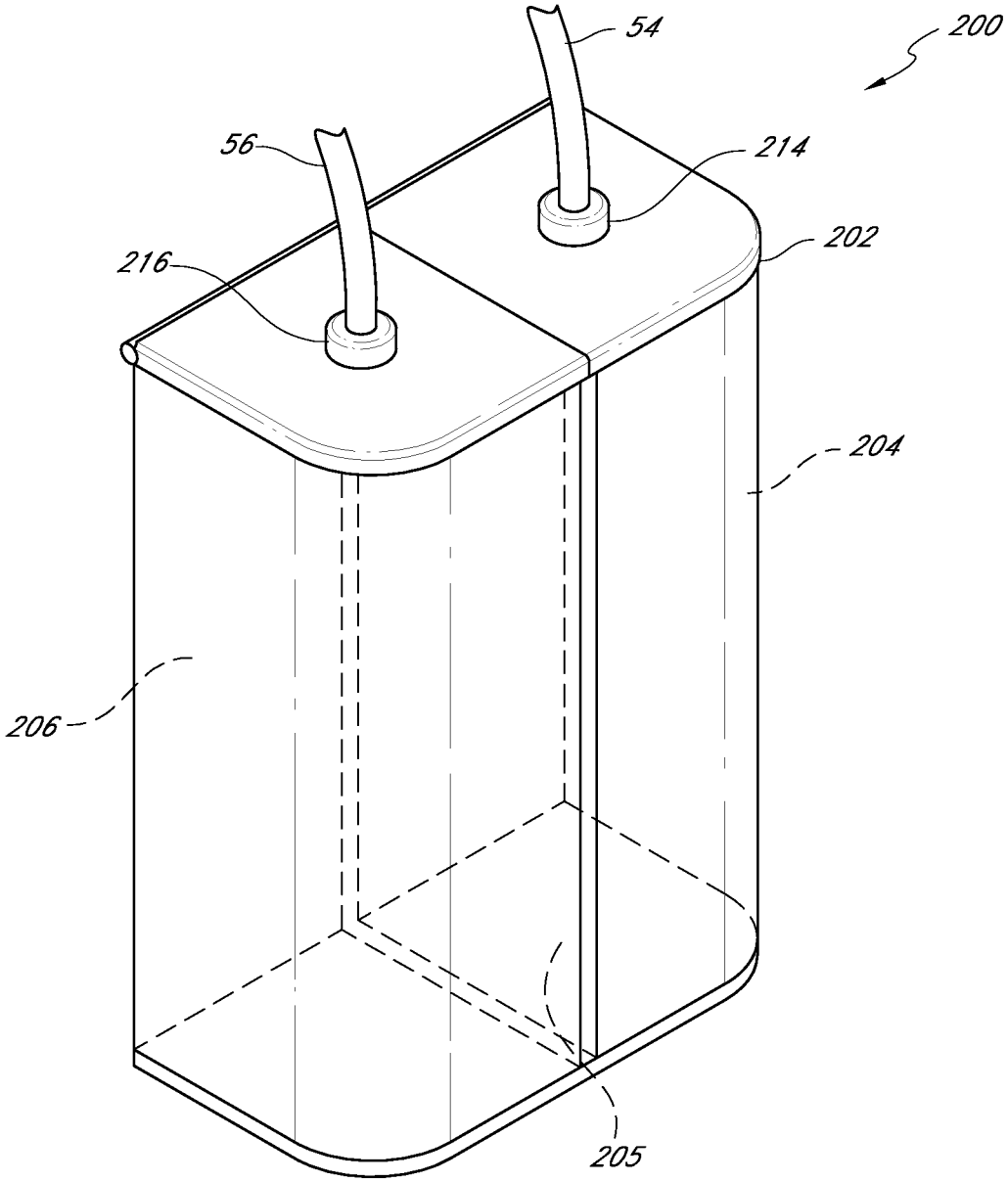


FIG. 6A

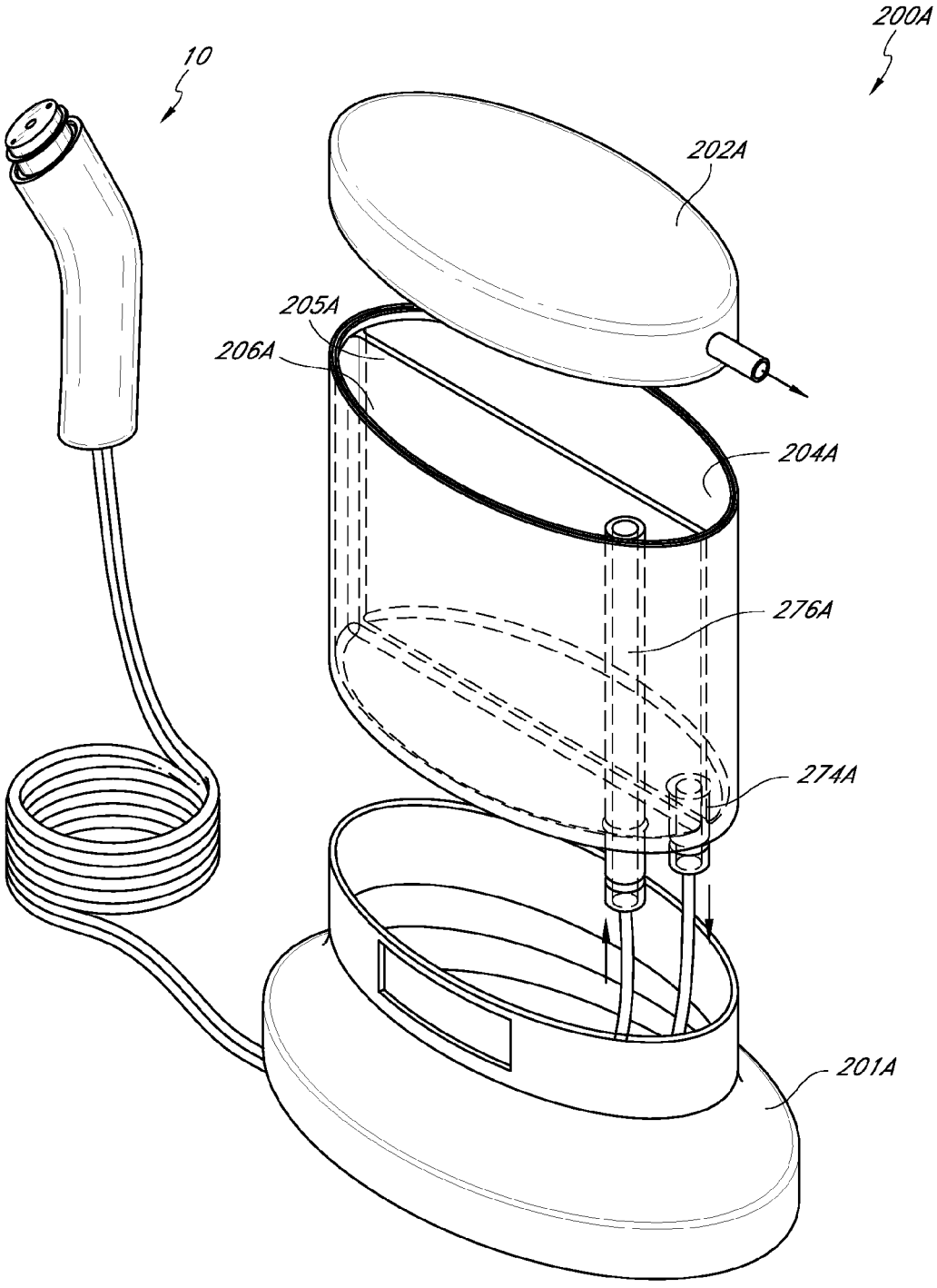


FIG. 6B

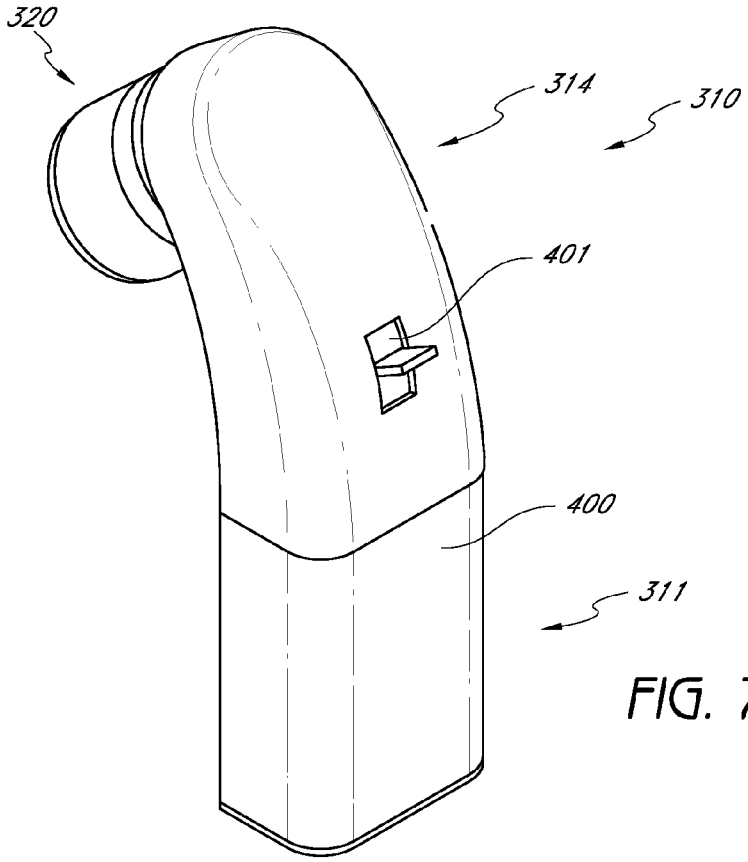


FIG. 7

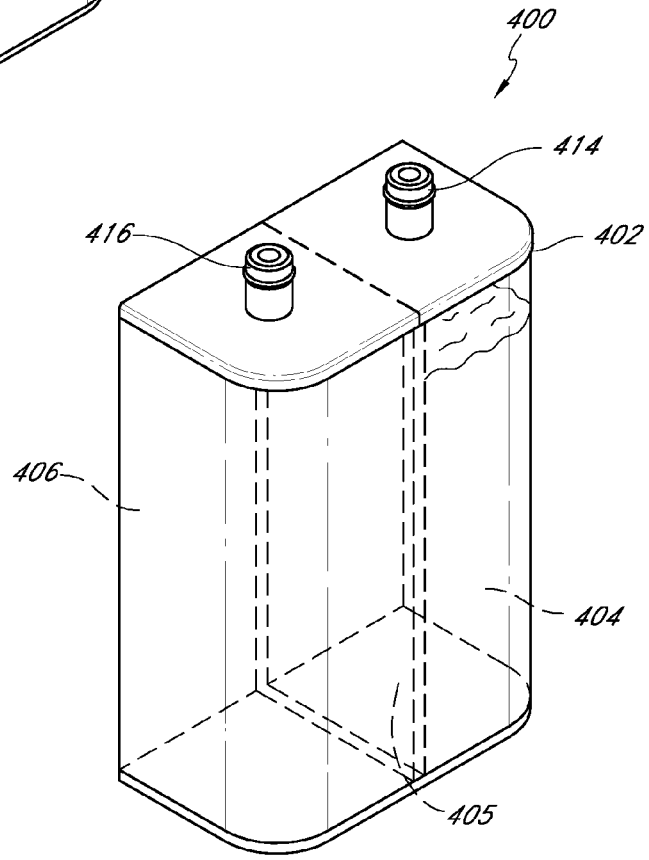


FIG. 8

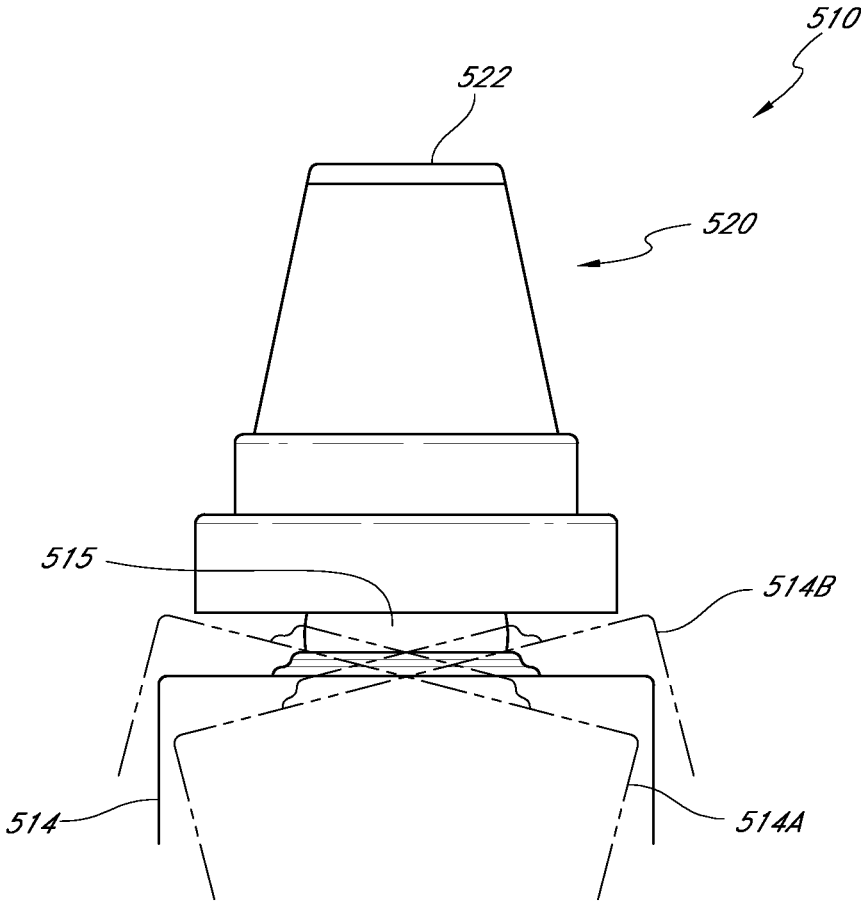


FIG. 9

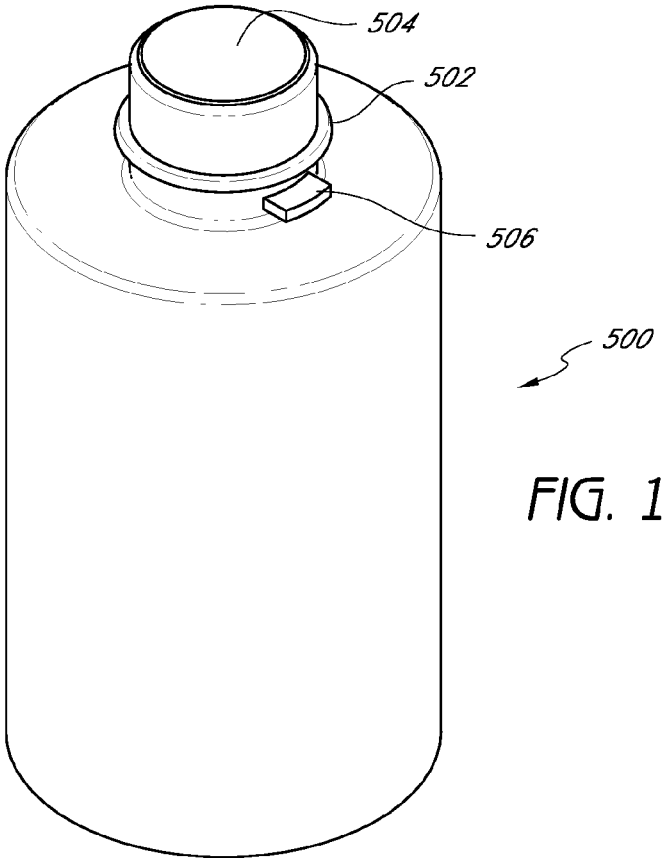


FIG. 10

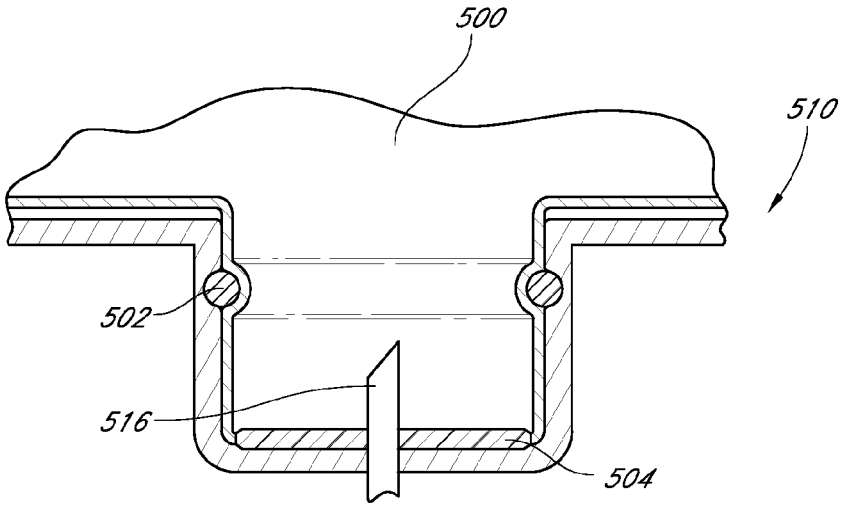


FIG. 11

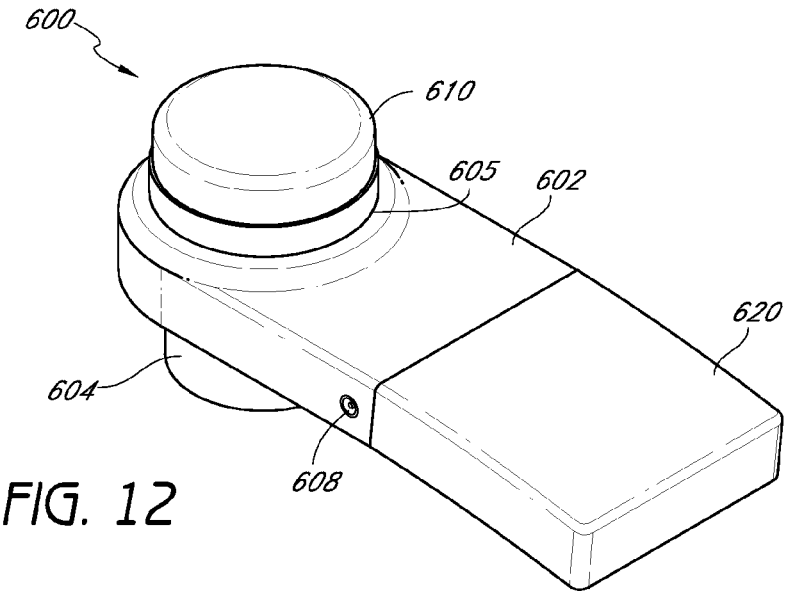


FIG. 12

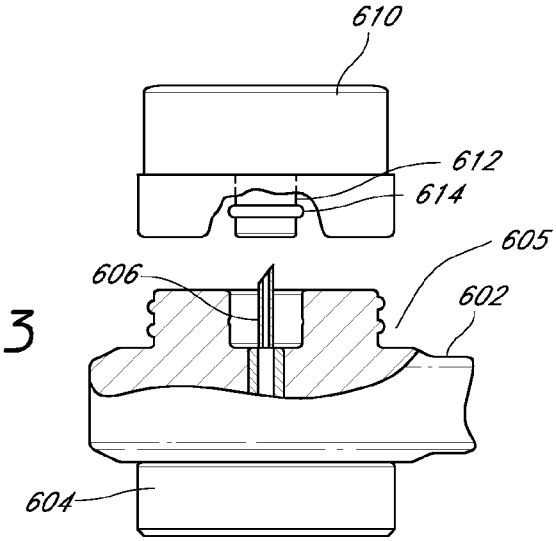


FIG. 13

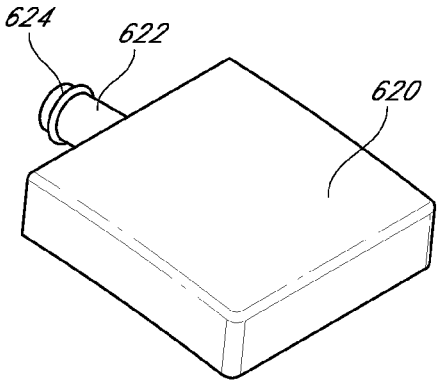


FIG. 14

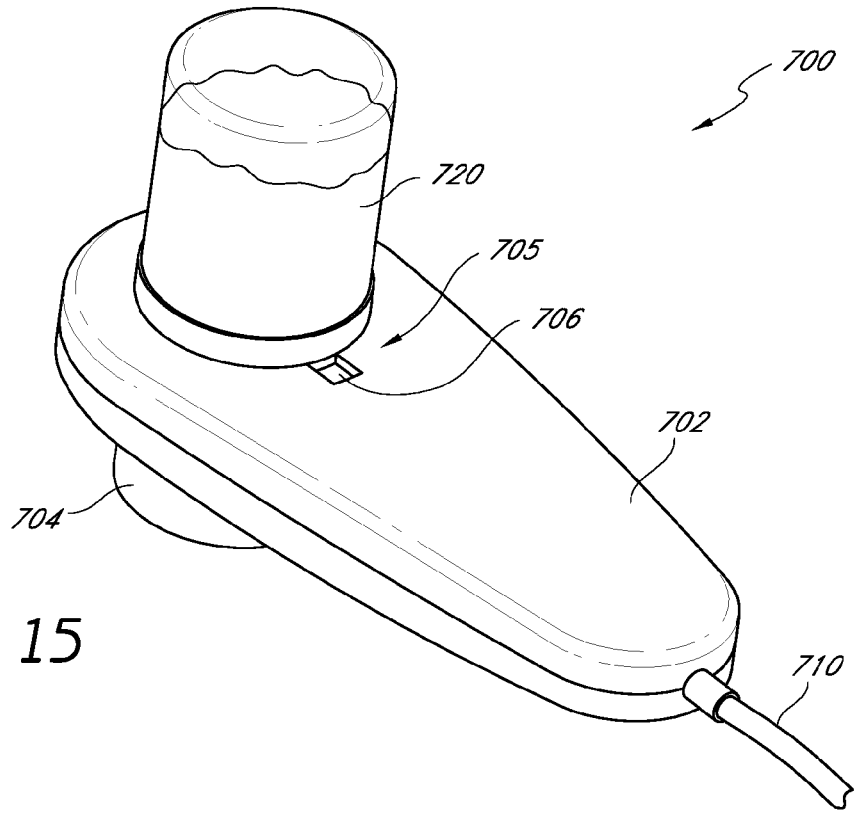


FIG. 15

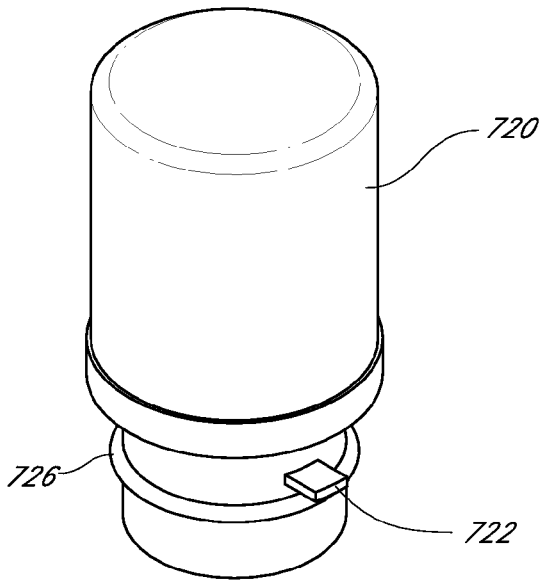


FIG. 16

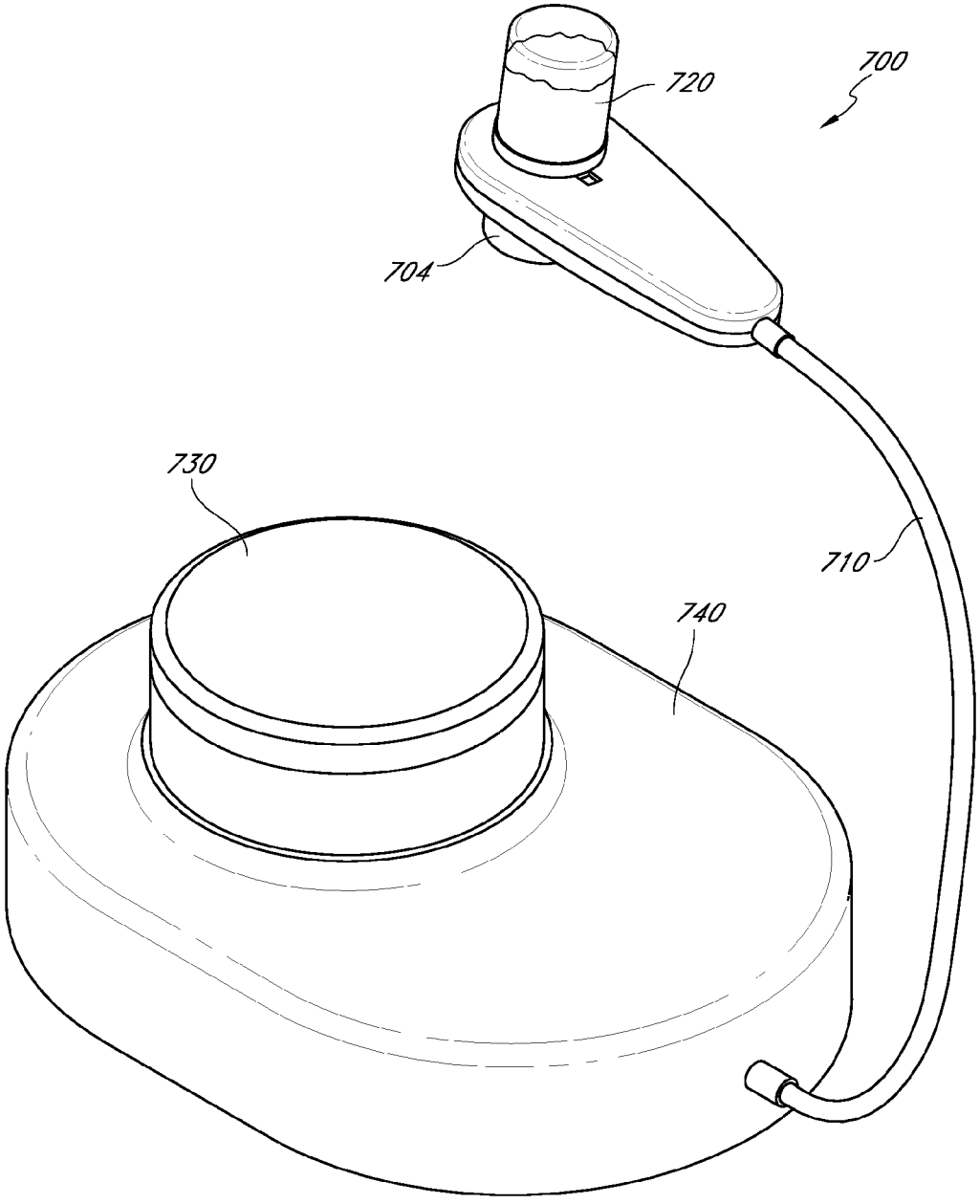


FIG. 17

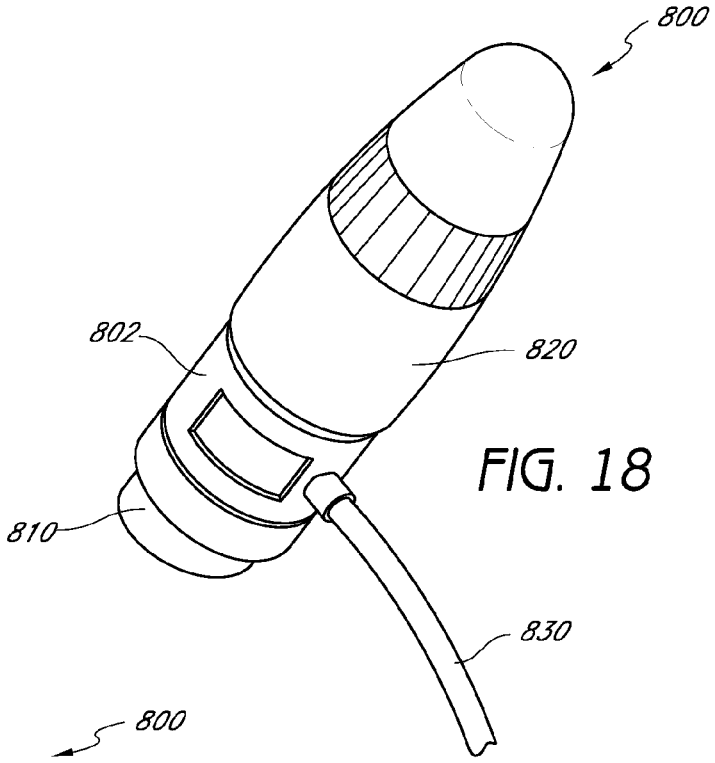

800
802
820
810
830

FIG. 18

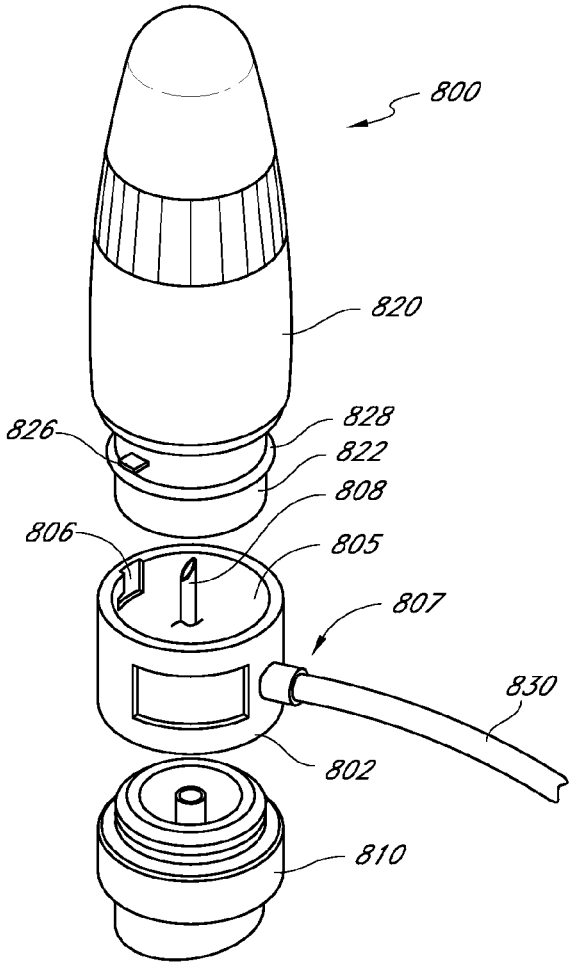

800
820
826
828
822
808
806
805
807
830
802
810

FIG. 19

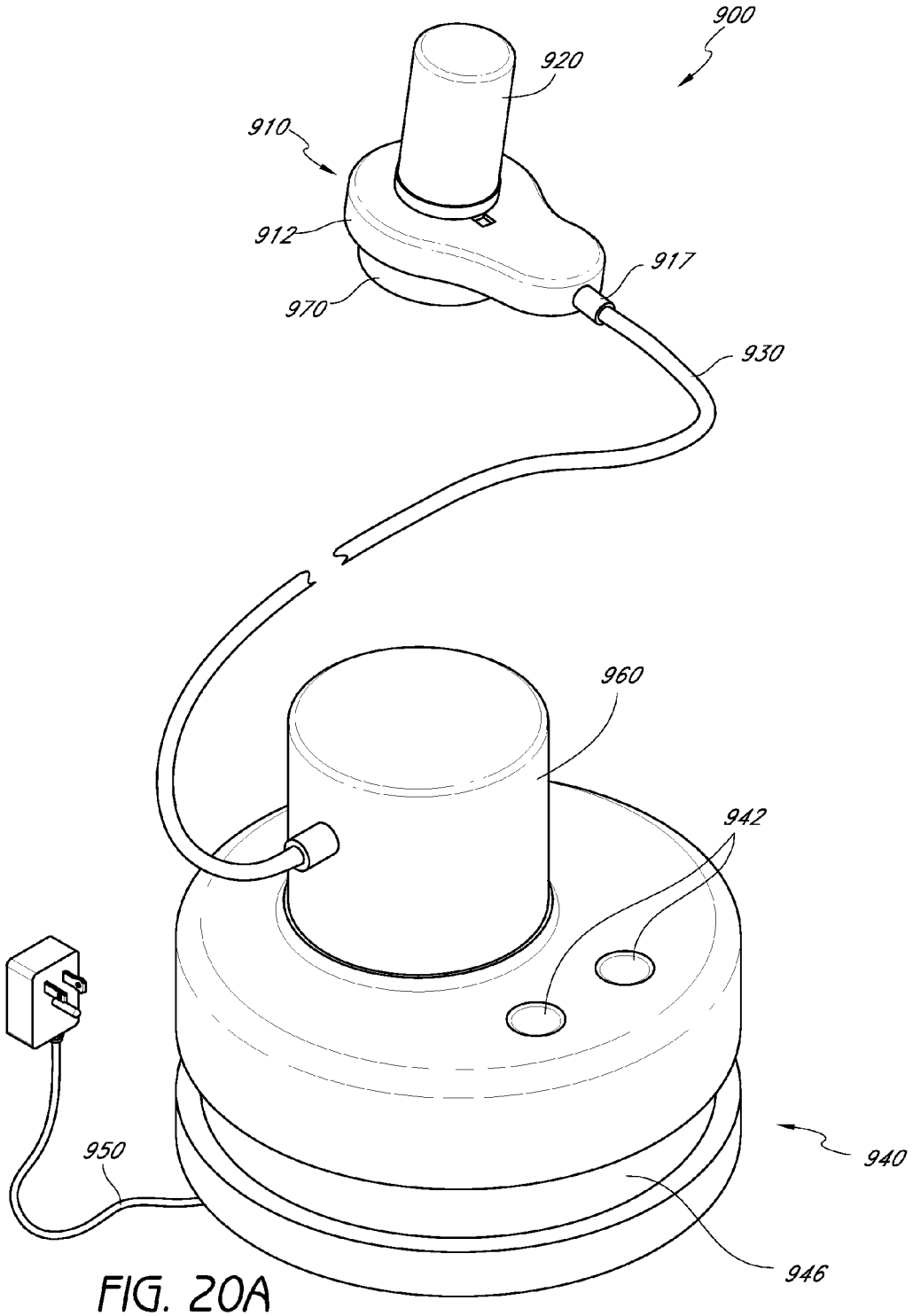


FIG. 20A

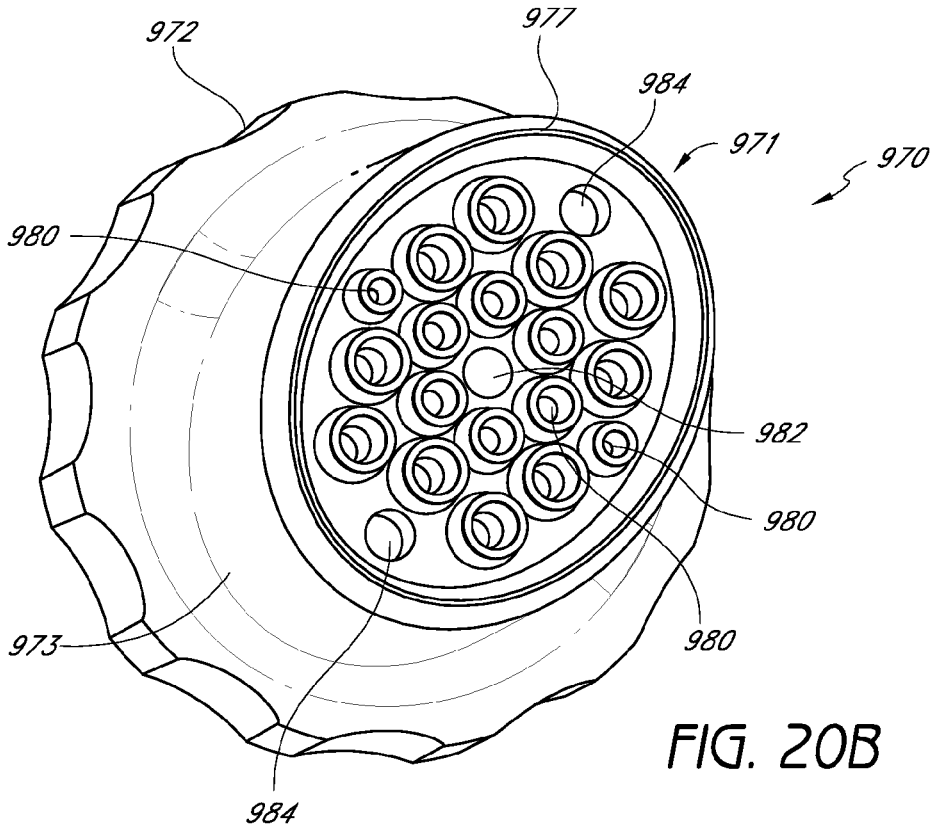


FIG. 20B

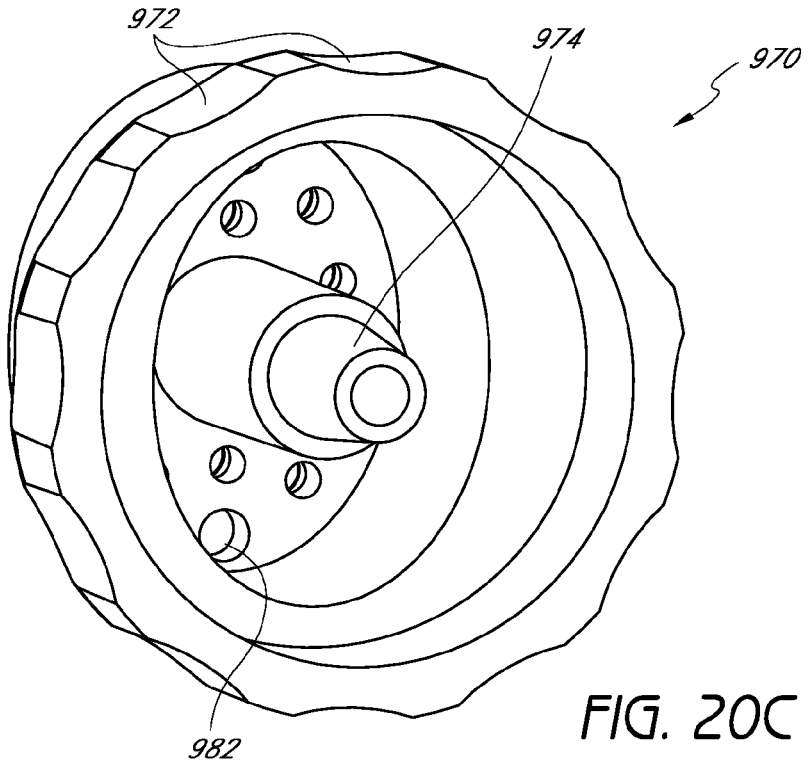


FIG. 20C

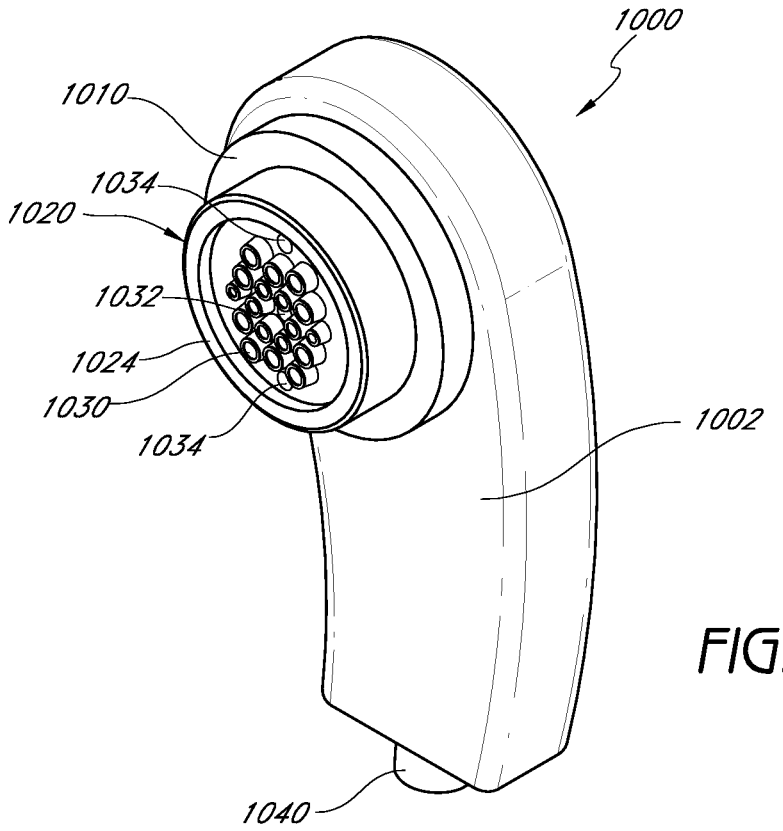

1000
1010
1034
1020
1032
1024
1030
1034
1002
1040

FIG. 21

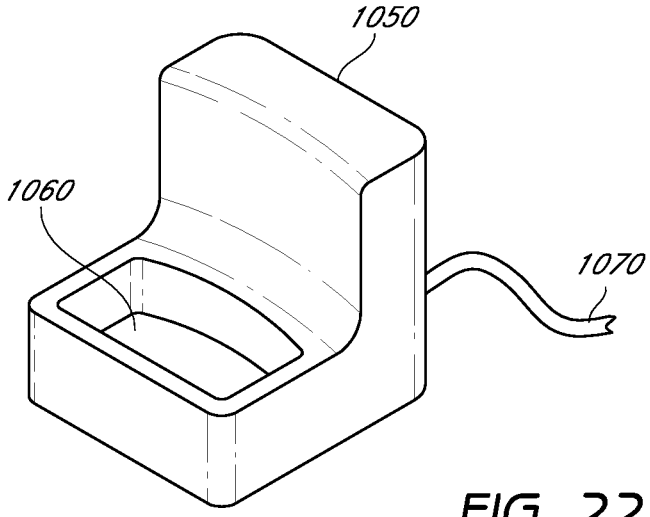

1050
1060
1070

FIG. 22

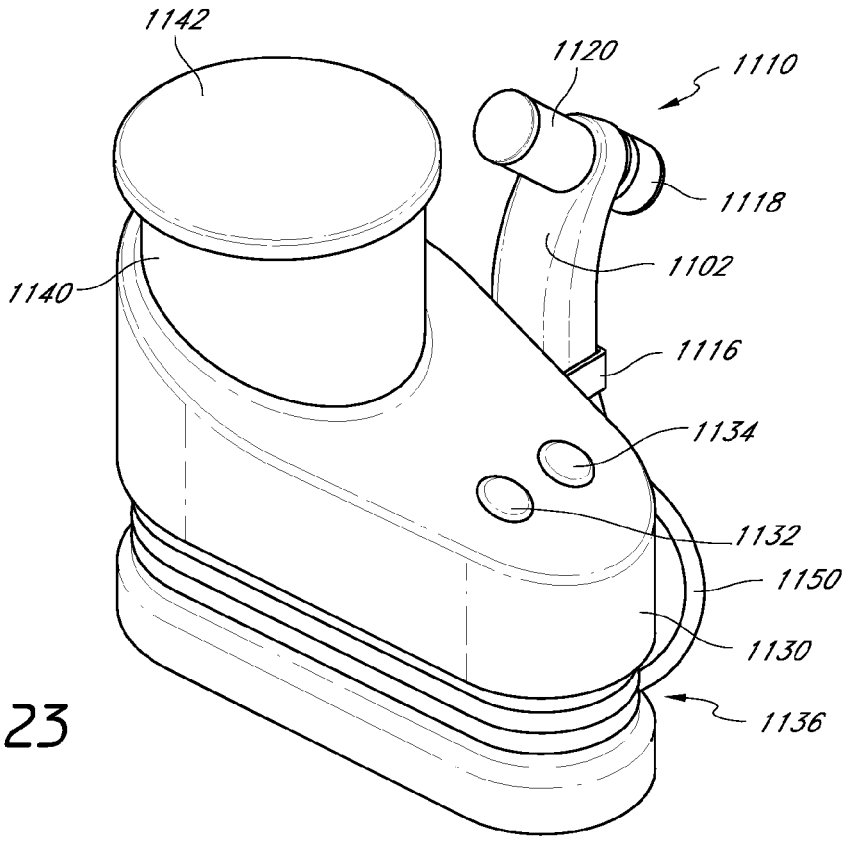

1142
1120
1110
1118
1102
1140
1116
1134
1132
1150
1130
1136

FIG. 23

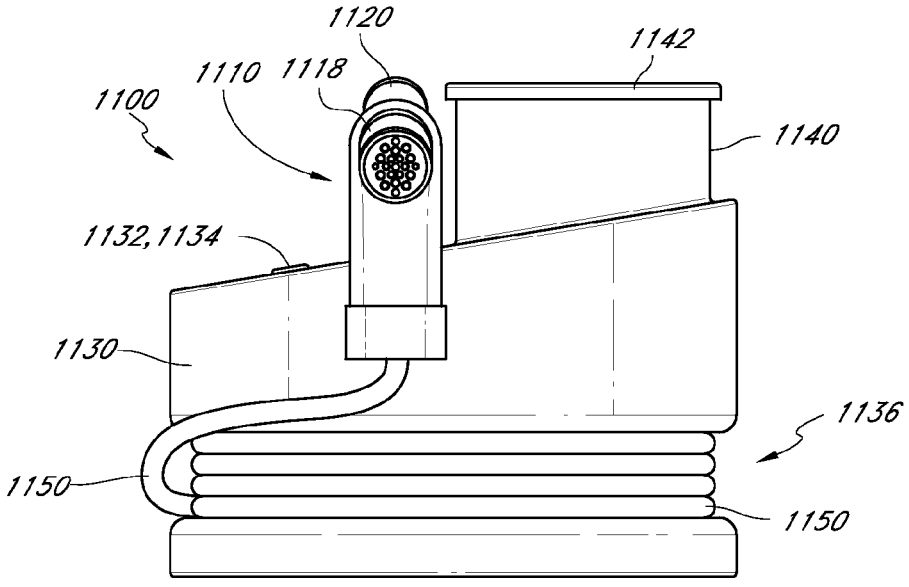

1120
1142
1110
1118
1100
1140
1132,1134
1130
1136
1150
1150

FIG. 24

MICRODERMABRASION APPARATUS AND METHOD

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is continuation of U.S. patent application Ser. No. 12/346,582, filed Dec. 30, 2008, which claims the priority benefit under 35 U.S.C. §119(e) of U.S. Provisional Application No. 61/019,196, filed Jan. 4, 2008 and U.S. Provisional Application No. 61/022,201, filed Jan. 18, 2008, the entireties of which are hereby incorporated by reference herein.

BACKGROUND

1. Field of the Inventions

This application relates in general to the field of skin treatment, and more specifically to apparatuses and methods for treating a person's skin.

2. Description of the Related Art

Abrasion of the outer layer or epidermis of the skin is desirable to smooth or blend scars, blemishes, or other skin conditions that may be caused by, for example, acne, sun exposure, and aging. Standard techniques used to abrade the skin have generally been separated into two fields referred to as dermabrasion and microdermabrasion. Both techniques remove portions of the epidermis called the stratum corneum, which the body interprets as a mild injury. The body then replaces the lost skin cells, resulting in a new outer layer of skin. Additionally, despite the mild edema and erythema associated with the procedures, the skin looks and feels smoother because of the new outer layer of skin.

Dermabrasion refers to a procedure in which the surface of the skin is removed due to mechanical rubbing by a handpiece with an abrasive element that is often in the form of a burr, wheel, or disc. This process tends to be painful and messy. In fact, the procedure is sometimes painful enough to require a local anesthetic. Dermabrasion leaves the skin red and raw-looking. The removed skin can take several months to regrow and heal. Recent efforts have led to the use of lasers instead of abrasive elements, which have resulted in less bleeding, but the pain and mess remains.

Efforts have been made to decrease the mess caused by the process waste, such as removed skin and blood, by adding a suction element. As the process waste is drawn into the suction opening, skin that has not been removed is also pulled against the grit surrounding the suction opening, so the procedure remains fairly messy due to the abrasion that takes place outside of the handpiece by the grit.

Microdermabrasion refers generally to a procedure in which the surface of the skin is removed due to mechanical rubbing by a handpiece emitting a stream of sand or grit. For example, a handpiece can be used to direct an air flow containing tiny crystals of aluminum oxide, sodium chloride, or sodium bicarbonate. The momentum of the grit tends to wear away two to three cell layers of the skin with each pass of the handpiece. Alternatively, new "crystal-free" microdermabrasion techniques utilize a diamond-tipped handpiece without a stream of grit.

Efforts to add a suction element have been more successful in microdermabrasion than in dermabrasion because the handpiece applying the stream of grit is more controllable to a localized area. That is, as the removed skin is drawn into the suction opening, skin that has not been removed is also pulled towards the handpiece where it is treated with the grit stream, allowing for simultaneous local treatment and suction.

Microdermabrasion removes moisture from the skin, so the procedure is always followed by the application of moisturizing creams. However, similar to topical application of moisturizing creams prior to microdermabrasion, the moisturizing elements only work as deep as the active ingredients can passively migrate through the remaining epidermis.

SUMMARY

According to some embodiments, a system for treating skin includes a handpiece assembly comprising a tip and a main body portion, the main body portion comprising an interior cavity and a canister configured to store at least one treatment or waste material. The treatment or waste material is in fluid communication with the tip.

In some embodiments, the system further comprises a fluid transfer device for transferring the treatment or waste material to and from the canister. In other embodiments, the system further includes a conduit configured to place the canister in fluid communication with the tip. In still other arrangements, the conduit is routed within the interior cavity of the main body portion. In another embodiment, the conduit comprises at least two passages with each passage configured to transfer a different material to or from the canister.

According to some embodiments, the handpiece assembly and the canister form a unitary structure. In alternative embodiments, the handpiece assembly and the canister are substantially separated. In one embodiment, the canister comprises at least one compartment which may be configured to contain a treatment fluid and/or waste materials. In other embodiments, the treatment fluid comprises a serum. In yet other arrangements, the tip of the handpiece assembly is removable.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other features, aspects and advantages of the present invention are described with reference to drawings of certain preferred embodiments, which are intended to illustrate, but not to limit, the present invention. The drawings include twenty-eight (28) figures. It is to be understood that the attached drawings are for the purpose of illustrating concepts of the present invention and may not be to scale.

FIG. **1** illustrates a perspective view of a handpiece assembly for use in a skin treatment system according to one embodiment;

FIG. **2**A illustrates a perspective view of one embodiment of a conduit adapted for use in the handpiece assembly of FIG. **1**;

FIG. **2**B illustrates a cross-sectional view of one embodiment of the tubing of FIG. **2**A;

FIG. **3** illustrates a perspective view of a handpiece assembly with a portion of the exterior surface removed to reveal an interior portion of the assembly according to one embodiment;

FIG. **4** schematically illustrates one embodiment of a skin treatment system according to one embodiment;

FIG. **5** illustrates a perspective view of a skin treatment system comprising a handpiece assembly and a canister according to one embodiment;

FIG. **6**A illustrates a perspective view of a combination storage and waste canister in accordance with another embodiment;

FIG. **6**B illustrates a perspective view of a combination storage and waste canister in accordance with yet another embodiment;

FIG. **7** illustrates a perspective view of another embodiment of a handpiece assembly;

FIG. **8** illustrates a perspective view of an embodiment of a combination storage and waste canister configured to be used with the handpiece assembly of FIG. **7**;

FIG. **9** schematically illustrates one embodiment of the distal end of a handpiece assembly having a tip that is configured to tilt or pivot;

FIG. **10** illustrates a perspective view of a cartridge or other container comprising a treatment fluid or other material according to one embodiment;

FIG. **11** illustrates a cross-sectional view of a handpiece assembly or other portion of the treatment system configured to receive the cartridge or container of FIG. **10**;

FIG. **12** illustrates a perspective view of a handpiece assembly according to another embodiment;

FIG. **13** illustrates a cross-sectional view of a portion of a handpiece assembly configured to receive a cartridge or other container according to one embodiment;

FIG. **14** illustrates a perspective view of waste cartridge or container configured for use with a skin treatment system according to one embodiment;

FIG. **15** illustrates a perspective view of a handpiece assembly according to one embodiment;

FIG. **16** illustrates a cartridge or other container configured for placement within a corresponding area of the handpiece assembly of FIG. **15**;

FIG. **17** illustrates a handpiece assembly in fluid communication with a fluid transfer system and a waste canister according to one embodiment;

FIGS. **18** and **19** illustrate an embodiment of a handpiece assembly;

FIG. **20**A illustrates a perspective view of a handpiece assembly in fluid communication with a waste canister in accordance with one embodiment;

FIG. **20**B illustrates a top perspective view of one embodiment of a removable tip adapted for placement on a handpiece assembly;

FIG. **20**C illustrates a bottom perspective view of the removable tip of FIG. **20**B;

FIG. **21** illustrates a perspective view of another embodiment of a handpiece assembly;

FIG. **22** illustrates a perspective view of a base charging member configured to receive a handpiece assembly according to one embodiment;

FIG. **23** illustrates a perspective view of a skin treatment system comprising a handpiece assembly and a base member having a waste canister according to one embodiment; and

FIG. **24** illustrates a side elevation view of the system of FIG. **23**.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. **1** illustrates one embodiment of a handpiece assembly **10** configured for use in a skin treatment system which may be used to perform one or more treatments on a person's skin. In the depicted embodiment, the handpiece assembly **10** comprises an outer housing **14** that can be grasped or otherwise manipulated by a user. As shown, the housing **14** can include a curved shape. In other embodiments, the shape, size and/or other details regarding the housing **14** can vary as desired.

With continued reference to FIG. **1**, the handpiece assembly **10** can include a tip **20** that is configured to contact or substantially contact the skin or other surface being treated. According to some embodiments, as illustrated in FIG. **1**, the tip **20** can be removable. Thus, the tip **20** can be easily changed for cleaning, hygienic or other purposes. For example, depending on the type of skin treatment procedure being performed, a user can select a tip **20** having a specific pattern or features along the distal end. Non-limiting examples of the various types of tips **20** that may be attached to the handpiece assembly **10** are disclosed in U.S. patent application Ser. No. 11/392,348, filed Mar. 29, 2006, the entirety to which is hereby incorporated by reference herein.

In arrangements where a removable tip **20** is used, the handpiece assembly **10** can include an interface portion **30** along its distal end that is configured to securely receive the tip **20**. In FIG. **1**, the interface portion **30** comprises an O-ring **40** or other sealing member to help prevent or reduce the likelihood of leaks. In other embodiments, one or more other types of gaskets or similar devices can be used, either in lieu of or in addition to an O-ring **40**.

With continued reference to FIG. **1**, the interface portion **30** can include one or more openings **44**, **46** or ports. In some embodiments, these openings **44**, **46** are configured to transfer fluids and/or other materials to and/or from the tip **20**. For example, in the depicted embodiment, the interface portion **30** comprises two fluid delivery openings **44** positioned along the periphery and one fluid suction opening **46** positioned along the center of the handpiece assembly **10**. In other embodiments, however, the number, location, spacing, shape, size and/or other details of the openings **44**, **46** can vary as desired or required.

One or more conduits **50** can be placed in fluid communication with the openings **44**, **46**, and thus, at least a portion of the tip **20** of the handpiece assembly **10**. The conduits **50** can be configured to transfer (e.g., deliver, withdraw, etc.) fluids or other materials to and/or from the distal end of the handpiece assembly **10**. As shown in FIG. **1**, the conduit **50** can be positioned at least partially within an interior portion of a handpiece assembly **10**. In the depicted embodiment, the conduit **50** extends out of the proximal end of the handpiece assembly **10**.

FIG. **2**A illustrates one embodiment of a conduit **50** that is configured for use in a handpiece assembly **10**. As shown, the conduit **50** can include a delivery passage **54** and a suction passage **56**. In other embodiments, the conduit **50** can comprise more or fewer passages, as desired or required by a particular application or use. In addition, the size, shape and other details of the passages **54**, **56** can be different than illustrated in FIGS. **2**A and **2**B. The conduit **50** can comprise tubing, pipe and/or the like. Further, the conduit **50** can include one or more rigid, semi-rigid and/or flexible materials, such as, for example, rubber, plastic, other polymeric materials, other synthetic materials, metal or the like.

With continued reference to FIG. **2**A, the various passages **54**, **56** of the conduit **50** can be co-molded or otherwise produced as a unitary structure. In FIG. **2**A, the passages **54**, **56** are attached to each other along a portion of the conduit **50** and separated from each other along another portion of the conduit **50**. According to some embodiments, the conduit **50** can be manufactured using extrusion or other production method. In other arrangements, individual passages that connect to the handpiece assembly **10** are separate members that may or may not be attached to one another. For example,

in one embodiment, the passages **54**, **56** can comprise separate rubber tubing portions that are joined to each other using adhesives, clips, tape, fasteners and/or one or more other attachment methods or devices. The shape, size and/or other details of the passages **54**, **56** can be different than illustrated herein.

FIG. **3** illustrates an exploded perspective view of the handpiece assembly **10** of FIG. **1** with a portion of the outer housing **14** removed to reveal an interior area. As shown, an interior of the handpiece assembly **10** can comprise one or more tabs **18**, guides, other fasteners and/or other members that are shaped, sized and otherwise configured to receive and secure one or more conduits **50** extending within the assembly **10**. By way of example, in FIG. **3**, a small portion of a conduit **50** is shown (in phantom) within one of the tabs **18**. In the illustrated embodiment, the handpiece assembly **10** includes a total of two tabs **18**. However, the quantity, type, shape, size and/or other details of the tabs **18** or other members can vary. Further, the proximal end of the handpiece assembly **10** can comprise an opening **16** or other slot through which a conduit **50** and/or other items can extend.

With continued reference to FIG. **3**, the interface portion **30** of the handpiece assembly **10** can include one or more ports **34**, **36** that are configured to attach to passages **54**, **56** of a conduit **50**. For example, in FIG. **3**, the delivery passage **54** is shown (in phantom) as being associated with a first port **34** and the suction passage **56** is shown (in phantom) as being associated with a second port **36**. In other embodiments, a handpiece assembly **10** comprises more or fewer ports, as desired or required. In addition, the size, shape, type and/or other details of the ports can vary. In some embodiments, once the tubing **50** is properly secured to the ports **34**, **36** of the handpiece assembly, the delivery passage **54** can be placed in fluid communication with the one or more delivery openings **44**. Likewise, the suction passage **56** can be placed in fluid communication with the one or more suction openings **46**. Consequently, one or more fluids or other materials can be selectively transferred (e.g., delivered to and/or removed from) the tip **20** of the handpiece assembly **10**.

As illustrated in FIG. **3**, the assembly **10** can be configured such that a single port **36** can be in fluid communication with two or more openings **46** located along a distal surface of the interface portion **30**. In other embodiments, a single opening along the distal surface of the interface portion **30** can be in fluid communication with two or more ports. Thus, the interface portion **30** can include one or more internal channels, flow splitting devices, flow control valves and/or any other devices or features that can selectively affect the flow of fluids therethrough. This can apply to delivery and/or suction ports and openings, as desired or required by a particular application.

The use of a conduit **50** that extends within an interior cavity of the handpiece assembly **10** can provide one or more advantages or benefits. For example, such designs can permit a user to easily remove, attach or replace a conduit **50** between or during a treatment or procedure. In addition, contamination of an interior of the handpiece assembly **10** can be reduced or eliminated because fluids or other substances transmitted through the handpiece assembly **10** are fully contained within the passages **54**, **56** of the conduit **50**.

FIG. **4** schematically illustrates one embodiment of a skin treatment system **6**A. The depicted treatment system **6**A comprises a handpiece assembly **10**, a conduit **50**, a fluid transfer device **70** (e.g., pump) in fluid communication with the conduit **50** and a canister **100** or other container. As shown, the handpiece assembly **10** can include a tip **20** that is adapted to contact and treat the skin S. A conduit **50** having a delivery passage **54** and a suction (e.g., removal) passage **56** can be attached to the handpiece assembly **10** and placed in fluid communication with the tip **20**. In addition, a pump **70** or other fluid transfer device can be placed in fluid communication with the conduit **50** (e.g., the suction passage **56**) to assist in transferring fluids or other materials to and/or from the tip **20**.

With continued reference to FIG. **4**, the canister **100** or other container can comprise a storage compartment **104** and a waste compartment **106**. In other arrangements, the canister **100** can include more or fewer compartments, as desired or required. For example, the canister **100** can include two or more storage compartments, each of which is configured to store a different fluid and/or other treatment media. In some embodiments, the canister **100** comprises a unitary structure having one or more baffles **105** or other dividing members to create two or more separate compartments **104**, **106**. However, in other embodiments, the system **6**A comprises two or more separate canisters that are not part of a unitary structure or that are not attached to each other.

In FIG. **4**, when the tip **20** is placed against the surface of the skin S to be treated, a pump **70** or other fluid transfer device can be used to draw a treatment media (e.g., water, saline, other fluids, other materials, etc.) from the storage compartment **104** and through the delivery passage **54**. At the same time, the pump **70** can remove waste materials from the treatment surface to the waste compartment **106** via the suction passage **56**. In other embodiments, one or more other methods and/or devices for delivering and/or withdrawing fluid or other materials to and/or from the distal end of the handpiece assembly **10** can be used.

As illustrated in FIG. **5**, a handpiece assembly **10** and a conduit **50** of a treatment system **6**B can be placed in fluid communication with a canister **100**. The illustrated canister **100** comprises a base **101** and one or more compartments **104**, **106**. As discussed, the canister **100** can include one or more storage compartments **104** and/or waste compartments **106** that are separated by a baffle **105** or other separation member. The various compartments **104**, **106** can be placed in fluid communication with one or more passages **54**, **56** of the conduit **50** to selectively transfer fluids and/or other materials to and/or from a handpiece assembly **10**. In addition, the system **6**B can include a pump or other fluid transfer device (not shown). For example, in one embodiment, a pump is placed within or near the base **101**. In other arrangements, the pump is positioned in one or more other locations (e.g., external to the base **101**).

With continued reference to FIG. **5**, the canister **100** can include a lid **102** or other cover member that permits a user to selectively access the interior of the compartments **104**, **106** for filling, emptying, cleaning and/or any other task. In some embodiments, the lid **102** comprises a hinge **110** or other device that facilitates accessing the interior of the various compartments **104**, **106**.

Another embodiment of a canister **200** is illustrated in FIG. **6**A. In the depicted arrangement, the canister **200** comprises a storage compartment **204** and a waste compartment **206**. As discussed, however, in other embodiments, the canister **200** can comprise more or fewer compartments, as desired or required. The compartments **204**, **206** can be separated by a baffle **205** or another separation member. In addition, the canister can include a removable lid **202** that permits a user to access the interior of the compartments **204**, **206**. In FIG. **6**A, each compartment **204**, **206** comprises a fitting **214**, **216** or similar member to which conduits or passages **54**, **56** of a conduit (e.g., tubing, pipe, etc.) can

attach. Thus, the conduit can be placed in fluid communication with the various compartments **204**, **206** of the canister **200**. In other embodiments, the fittings **214**, **216** or ports can be located in one or more other locations of the canister **200** (e.g., the bottom, side, etc.).

A different embodiment of a canister **200**A is illustrated in FIG. **6**B. As with other embodiments, the illustrated canister **200**A comprises a supply compartment **204**A and a waste compartment **206**A that are separated by a baffle **205**A or other member. As shown, the canister **200**A can comprise a base **201**A and a lid **202**A or other cover member. In addition, the compartments **204**A, **206**A can comprise one or more internal channels or conduits **274**A, **276**A that facilitate in the transfer of fluids or other materials into and/or out of the canister **200**A. In some embodiments, the canister **200**A is configured to move fluids to and from a handpiece assembly **10** in a manner similar to what is schematically described in FIG. **4**.

FIG. **7** illustrates a handpiece assembly **310** according to another embodiment. In the depicted arrangement, the handpiece assembly **310** comprises a main body portion **314** and a tip **320** that is configured to contact and treat the skin. In addition, in the illustrated embodiment, the proximal end **311** of the assembly **310** includes a canister **400**. Thus, unlike other arrangements disclosed herein, the depicted canister **400** is physically attached to and incorporated into the handpiece assembly **310**. In one embodiment, the canister **400** can be separated and/or attached to the main body portion **314** of the handpiece assembly **310** by manipulating a release tab **401**, button or other feature. One or more gaskets, O-rings or other members (not shown) can be positioned between the main body portion **314** and the canister **400** in order to reduce the likelihood of leaks.

Accordingly, a user can easily and conveniently handle and manipulate the handpiece assembly **310** illustrated in FIG. **7** (or variations thereof) because the canister **400** and the main body portion **314** of the assembly **310** are self contained within a single structure. In some embodiments, the handpiece assembly **310** includes an internal pump or other fluid transfer device within its main body portion **314**. Alternatively, a fluid transfer device and/or any other component can be positioned outside of the handpiece assembly **310** and/or at any other location. Such components can be attached to or separate from the handpiece assembly, as desired or required.

FIG. **8** illustrates one embodiment of a canister **400** configured for use with a self-contained handpiece assembly **310** such as the one as illustrated in FIG. **7**. As shown, the canister **400** can comprise a delivery compartment **404** in which one or more treatment fluids or other materials can be placed. In addition, the canister **400** can comprise a waste compartment **406** to which fluids, exfoliated skin and/or other substances withdrawn from the treatment surface can be directed. As with other embodiments disclosed herein, the canister **400** can comprise a baffle **405** or other separation member. In other embodiments, completely separate canisters can be attached to the proximal end of the handpiece assembly **310** (e.g., one or more delivery canisters, a waste canister, etc.).

With continued reference to FIG. **8**, the canister **400** can comprise one or more ports **414**, **416** or other fittings through which fluids or other substances can be transferred (e.g., between the tip **320** and the canister **400**). According to some embodiments, the canister **400** is configured to lock to the main body portion **314** using one or more devices or methods, such as, for example, locking tabs, clasps, magnetic connectors, other fasteners and/or the like.

Any of the embodiments of a handpiece assembly disclosed herein can comprise a tip that swivels, rotates and/or otherwise moves relative to a main body portion. Such a feature can facilitate moving and manipulating a handpiece assembly along a person's skin surface during a treatment procedure. This can be particularly significant when the treatment surface is highly contoured.

In the embodiment illustrated in FIG. **9**, a handpiece assembly **510** comprises a joint **515**, hinge or other movement mechanism (e.g., ball joint or mechanism, swivel joint or mechanism, etc.). In the illustrated arrangement, the joint **515** is generally located between the tip **520** and the main body portion **514** of the handpiece assembly **510**. As illustrated in phantom, such a joint **515** or other mechanism can advantageously permit a tip **520** to be moved relative to the adjacent body portion **514**. For example, in some embodiments, the body portion **514** can be moved relative to the tip **520** between a first position **514**A and a second position **514**B. In some embodiments, the passages of a conduit (not shown) are configured to pass through the joint **514** (e.g., for passages to be in fluid communication from the main body portion **514** to the tip **520** through the joint **515**) to permit fluids or other materials to be transferred to and/or from the working surface **522** of the tip **520** during the operation of the handpiece assembly **510**.

With respect to any of the embodiments discussed and/or illustrated herein, the handpiece assembly, pump or other fluid transfer device and/or any other component of the skin treatment system can be powered using one or more power sources. For example, in some embodiments, a battery (e.g., disposable, rechargeable, etc.), an AC power source (e.g., with or without a transformer) or any other power device or source can be connected, attached or otherwise supplied to the desired component or subcomponent of the treatment system. In addition, the various components or subcomponents can include one or more controllers, electrical and/or instrumentation connections, ports and/or the like, as desired or required for the proper operation of the treatment system.

According to one embodiment, the self-contained handpiece assembly **310** illustrated in FIG. **7** is configured to include a rechargeable battery. The handpiece assembly **310** can be sized, shaped and otherwise configured to be placed in a docking station when not in use. The docking station can be configured to recharge the battery of the assembly **310**. In other embodiments, however, a handpiece assembly can be powered by AC or DC power (e.g., connected to a power cable or the like).

FIG. **10** illustrates one embodiment of a cartridge **500** containing a serum and/or another fluid or material used during a skin treatment procedure. As shown, the cartridge **500** can comprise a membrane **504** or other member to seal or substantially seal the internal contents of the cartridge **500**. In addition, the cartridge **500** can include a locking ear **506** or other feature or member that is configured to mate with a corresponding portion of the handpiece assembly. In some embodiments, such a locking ear **506** is sized, shaped and otherwise configured to align with a slot or other opening in a docking area of the handpiece assembly. Once the locking ear **506** or other feature is properly aligned with and pushed into a corresponding recess or other portion of the handpiece assembly, the cartridge **500** can be rotated or otherwise moved to secure it to the handpiece assembly. In other arrangements, a cartridge include two or more locking ears **506** or other features that are configured to mate with corresponding areas or portions of the handpiece assembly.

With further reference to FIG. **10**, the cartridge **500** can include an O-ring **502** or other sealing member to help

prevent fluids and/or other substances from leaking once the cartridge **500** is properly inserted within the handpiece assembly. In the illustrated embodiment, the cartridge **500** comprises a generally cylindrical body with a relatively narrow neck portion. However, it will be appreciated that the shape, size and/or any other details or characteristics of the cartridge **500** can be different than illustrated and discussed herein to suit a particular application or use.

FIG. **11** illustrates a cross-sectional view of a docking portion or area **510** of a handpiece assembly with a cartridge **500** being secured therein. As illustrated, the docking area **510** of the handpiece assembly can include a hollow tube **516** or other puncturing member that is configured to penetrate the membrane **504** when the cartridge **500** is securely positioned within the docking area **510**. As discussed, in order to prevent or reduce the likelihood of leaks, the nozzle of the cartridge and/or the docking area **510** can comprise an O-ring **502** and/or another sealing member.

According to some embodiments, once the membrane **504** is punctured, the internal contents of the cartridge **500** can be in fluid communication with the tip (not shown) of a handpiece assembly. Thus, the hollow tube **516** or other penetrating member can access the internal contents of the cartridge **500** so they can be transferred through the body of the handpiece assembly to a working surface (e.g., tip). The fluids and/or other substances can be conveyed to a tip or other working surface of the handpiece assembly by gravity flow, using a pump or other fluid transfer device and/or the like. In some arrangements, as illustrated in FIG. **10**, the cartridge **500** includes a locking member **506** (e.g., tab) that is configured to mate with a corresponding portion of the docking area **510** when properly inserted therein.

The membrane **504** of the cartridge **500** can include any flexible, semi-rigid or rigid materials that is adapted to be punctured by a hollow tube **516** or other member when the cartridge **500** is secured to a handpiece assembly. In some embodiments, the membrane comprises rubber, plastic and/or the like. In addition, the membrane **504** can be configured to be re-sealable once the cartridge **500** is removed from the handpiece assembly.

FIGS. **12-14** illustrate another embodiment of a handpiece assembly **600** adapted to treat the skin. The depicted assembly **600** comprises a main body portion **602**, a working tip **604** and a docking area or port **605** in which a cartridge **610** and a waste canister **620** can be inserted. Such a handpiece assembly **600**, as with other embodiments disclosed herein, can be an all-inclusive assembly that eliminates or reduces the need for other separate components. For example, the main body portion **602** can comprise a vacuum pump or other fluid transfer device (not shown) to help deliver fluids and other treatment materials to the working tip **604** and remove waste fluids, exfoliated skin and/or other materials to the waste canister **620**.

With reference to FIG. **13**, the handpiece assembly **600** can include a docking port or area **605** that is configured to receive a cartridge **610**. The cartridge can include one or more treatment fluids, substances or the like. In some embodiments, as discussed herein with respect to the embodiment illustrated in FIG. **10**, the cartridge **610** comprises a membrane (not shown in FIG. **13**) that is configured to substantially seal the internal contents of the cartridge **610**. The docking area **605** can include a puncturing member **606** (e.g., hollow tube, syringe, needle, etc.) that is sized, shaped, positioned and otherwise configured to break the membrane or seal so that the contents of the cartridge **610** can be placed in fluid communication with the main body portion **602** and the tip **604** of the handpiece assembly **600**. The cartridge **610** and docking area **605** can include one or more mating features (e.g., threads, locking tabs, snap connections, other mechanical fasteners, etc.) to ensure that the cartridge **610** is secured to the handpiece assembly **600** during use.

As illustrated in the cutaway cross-sectional view of FIG. **13**, the docking area **605** can be shaped, sized and otherwise configured to receive a nozzle **612** or other protruding member of the cartridge **610**. Accordingly, the hollow tube **606** or other puncturing member of the main body portion **602** can penetrate a membrane or other sealing member disposed along the end of the nozzle **612** once the cartridge **610** is secured within the docking area **605**. In order to prevent or reduce the likelihood of leaks of fluids and/or other substances contained within the cartridge **610**, the nozzle **612** can comprise one or more O-rings **614** or other sealing members.

The handpiece assembly **600** illustrated in FIGS. **12-14** includes a generally rectangular shape. However, in other embodiments, the shape, size and/or other characteristics or properties of the handpiece assembly **600** can vary, as desired or required by a particular application or use.

FIG. **14** illustrates one embodiment of a waste canister **620** that is configured to attach to a proximal end of the handpiece assembly **600**. The waste canister **620** can be configured to collect exfoliated skin, used serums and other fluids and/or the like that are drawn away from a person's skin during treatment. As shown, the waste canister **620** can comprise a port **622** that is adapted to engage and secure to one or more receiving areas of the main body portion **602** of the handpiece assembly **600**. As with the cartridge **610**, the waste canister **620** can include one or more mating features with the adjacent portion of the handpiece assembly **600**. Further, one or more O-rings **624** or other sealing members can be used to prevent or reduce the likelihood of leaks between the waste canister **620** and the main body portion **602** of the handpiece assembly **600**.

With continued reference to FIG. **12**, the handpiece assembly can include a port **608** or other connection for a power source or other electrical connection. In some embodiments, the port **608** is configured to receive an AC adapter or transformer (e.g., 12 volt charger). In other embodiments, the handpiece assembly **600** comprises a rechargeable battery or other power source (not shown) which may be recharged via the port **608**.

FIGS. **15-17** illustrate another embodiment of a handpiece assembly **700** that comprises, among other things, a main body portion **702**, a working tip **704** and a docking area **705** for receiving a cartridge **720**. As shown in FIG. **16**, the cartridge **720** can comprise a locking ear **722** or other protruding member that is sized, shaped and otherwise configured to help mate and secure the cartridge **720** to the docking area **705**. For example, the docking area **705** can include a recess **706** (e.g., turn lock feature) that is adapted to receive the locking ear **722** or other member of the cartridge **720**. Once the cartridge **720** is aligned with and inserted into the recess **706**, it can be rotated or otherwise moved to temporarily secure the cartridge **720** to the main body portion **702** of the assembly **700**.

When the contents of the cartridge **720** have been emptied and/or when a user wishes to use fluids and/or materials contained with a different cartridge **720**, the process by which the cartridge **720** was secured within the docking area **705** can be reversed. For example, the cartridge **720** can be rotated so that the locking ear **722** or other protruding member generally aligns with the recess **706** to permit the cartridge **720** to be removed. As with other embodiments,

the illustrated cartridge **720** can include an O-ring **726** or other sealing member to prevent or reduce the likelihood of leaks.

With continued reference to FIGS. **15-17**, for aesthetic, ease of handling and/or any other reason, the handpiece assembly **700** can include a tapered shape. As with any other embodiments disclosed herein, or variations thereof, the handpiece assembly **700** can be designed with finger grips or other features that facilitate a user to grip and manipulate the handpiece assembly **700** during use. In addition, the outer surface of any of the embodiments of the handpiece assemblies discussed and/or illustrated herein (or variations thereof) can comprise one or more durable materials that are configured to withstand the elements to which they may be exposed. In some embodiments, the exposed surfaces of a handpiece assembly comprise plastics, metals (e.g., stainless steel) and/or the like.

With continued reference to FIG. **17**, the handpiece assembly **700** can be placed in fluid communication with a housing **740** and a waste canister **730** via one or more conduits **710**. As shown, the housing **740** can receive a removable waste canister **730** along its upper surface. Alternatively, the housing **740** can be adapted to receive one or more waste canisters **730** at any other portion or location. In some embodiments, the canister **730** can be advantageously removed from the housing **740** for emptying, cleaning and/or any other purpose. As with other embodiments disclosed herein, the housing **740** can comprise an internal and/or external pump or other fluid transfer device. Such a fluid transfer device can be used to remove waste fluids and/or other materials away from the tip **704** of the handpiece assembly **700** (e.g., via a waste conduit **710**), and in some arrangements, simultaneously draw treatment serums and other fluids from the canister **720** toward the tip **704** of the handpiece assembly **700**.

The pump, other fluid transfer device and/or any other electric component or features of the system can be operated by one or more power sources (e.g., AC, DC, rechargeable or disposable batteries, etc.). In addition, the handpiece assembly **700** and/or the housing **740** can include buttons, dials and/or other members that permit a user to selectively control the operation during a treatment procedure.

FIGS. **18** and **19** illustrate another embodiment of a handpiece assembly **800** configured for use in a skin treatment system. Like in other embodiments disclosed herein, the depicted handpiece assembly **800** comprises a main body portion **802**, a removable tip **810** and a receiving or docking area **805** for securely receiving a cartridge **820**. As shown, the main body portion **802** of the handpiece assembly **800** can comprise a port **807** to which a conduit **830** or other channeling member may connect. According to some embodiments, the conduit **830** is placed in fluid communication with a vacuum pump or other fluid transfer device (not shown) for removing waste materials away from the treatment surface (e.g., tip **810**).

As discussed herein in reference to other arrangements, the cartridge **820** can include a nozzle portion **822** with a locking ear **826** or other protruding member that is configured to engage and mate with a corresponding slot **806**, recess and/or other feature of the docking area **805**. Further, the nozzle of the cartridge **820** can include an O-ring **828** or other sealing member to prevent or reduce the likelihood of leaks when fluids and/or other substances are being transferred from the cartridge **820** to the tip **810**. In some embodiments, the end of the nozzle portion of the cartridge comprises a membrane or other member (not shown) that can be punctured or otherwise compromised by a hollow tube **808**, spike or other member when the cartridge **820** is secured within the docking area **805**.

Another embodiment of a skin treatment system **900** comprising a handpiece assembly **910**, a replaceable cartridge **920** and a separate base member **940** is illustrated in FIG. **20**A. As shown, the handpiece assembly **910** can comprise a main body portion **912** to which a cartridge **920** and a removable tip **970** can be secured. In addition, the handpiece assembly **910** can include a port **917** that is used to place the handpiece assembly **910** in fluid communication with the base member **940** via one or more conduits **930**. As with other embodiments disclosed herein, the cartridge **920** can be selectively secured to and/or removed from the main body portion **912** of the handpiece assembly. Thus, the cartridge **920** can include one or more locking ears, O-rings and/or the like.

In addition, the base member **940** can include a waste canister or container **960** that is adapted to receive waste fluids and other substances. As with the cartridge **920**, the waste canister **960** can be configured to be selectively secured to and/or removed from the base member **940** for emptying, cleaning, replacement and/or any other purpose.

Further, in some embodiments, the base member **940** comprises one or more controls (e.g., ON-OFF switches, other switches, knobs and/or the like) for regulating the operation of the system. As shown, a power supply or other electrical connection **950** can be used to power the base member **940**, a vacuum pump or other fluid transfer device contained within the base member **940** (or any other portion of the system) and/or any other electrical component or subcomponent of the system. Further, the base member **940** can comprise a recessed area **946** along its lower portion which is configured to receive one or more conduits **930**, power cables and/or the like.

FIGS. **20**B and **20**C illustrate different views of one embodiment of a removable tip **970** configured for placement on a handpiece assembly as disclosed herein. As shown, the tip **970** can include a tip body portion **973** and a tip skirt portion **972** extending along the bottom of the tip body portion **973**. The skirt portion **972** can include a plurality of gripping members or other features (e.g., recesses, protrusions, etc.) to facilitate the handling of the tip **970**.

A tip can be configured to slidably connect to the distal end and/or any other portion of a handpiece assembly. For example, in some embodiments, the tip can be press fit onto the handpiece assembly. One or more O-rings or other sealing members can be used between adjacent surfaces of the tip and the handpiece assembly to prevent or reduce the likelihood of undesirable leaks. In other embodiments, a tip can be secured to a handpiece assembly using any other method or device, such as, for example, a threaded connection, interlocking tabs, flanges or other members, other fasteners and/or the like. In still other arrangements, the tip can be permanently or semi-permanently attached to the handpiece assembly.

In the embodiment illustrated in FIGS. **20**B and **20**C, the tip **970** comprises one or more surfaces, elements and/or features along its distal end **971** that are configured to treat (e.g., exfoliate) skin. Such tips can include one or more treatment elements, either in addition to or in lieu of abrasive elements. As used herein, "abrasive element" is a broad term and includes, without limitation, protruding elements, abrasive materials (e.g., grit, sandpaper-like material, other coarse materials, etc.), roughened surfaces, contoured surfaces, surfaces with openings, recesses or other features, brushes, blades, surfaces impregnated with diamonds or

other materials and/or the like. Further, as used herein, "treatment element" is a broad term and includes, without limitation, an abrasive element, massage elements or features, elements or features configured to moisturize or apply one or more treatment agents or fluids, polishing or soothing elements or features and/or the like. As discussed, any embodiments of a tip for a handpiece assembly can comprise one or more treatment elements and/or abrasive elements, as desired or required by a particular application.

As illustrated in FIGS. **20**A and **20**B, the tip **970** can include a lip **977** or other ridge member along its outer periphery. The lip member **977** can generally define the periphery of the distal end **971** of the tip **970**. In some embodiments, when the tip **970** is positioned against the skin, the lip member **977** inhibits or substantially inhibits fluids or other materials from escaping a space generally defined between the tip **970** and the adjacent skin surface.

With continued reference to FIGS. **20**B and **20**C, the tip **970** can include a plurality of protruding members **980** positioned along its distal end **971** and within the interior of the lip member **977**. The protruding members **980** can be posts or other cylindrically-shaped objects. In some embodiments, the protruding members **980** comprise relatively sharp edges, which can be configured to remove skin. The protruding members **980** can have relatively sharp planing blades. The plurality of protruding members **980** can ablate or roughen a plurality of smaller sections of the skin being treated.

As illustrated, the outer diameter or other comparable dimension (e.g., length, width, etc.) of the posts or other protruding members **980** can vary. In other arrangements, the diameter and/or other dimensions of the protruding members can be similar or substantiality similar. The posts or other protruding members **980** can be located, spaced and otherwise oriented along the distal end **971** of the tip **970** in any desired or required manner.

It will be appreciated that the size, shape, spacing, orientation, location and/or other properties of the protruding members **980** can be different than illustrated and disclosed herein, as desired or required by a particular procedure or application. As discussed herein, the lip member **977** of the tip **970** can help create an enclosed space generally defined between the distal end **971** of the tip **970** and the skin surface being treated. Therefore, according to some embodiments, the lip member **977** extends above the top of the protruding members **980** so that the protruding members are within the enclosed space during a treatment procedure. In other embodiments, the top surface of the lip **977** is generally aligned with the top surface of or below the protruding members **980**.

With reference to FIGS. **20**B and **20**C, the tip **970** can include an interior delivery stem **974** that is configured to place the distal end **971** of the tip **970** in fluid communication with the one or more delivery channels or other conduits located within the handpiece assembly. For example, the delivery stem **974** can be sized, shaped and otherwise adapted to receive fluids and/or other materials from an internal delivery channel of the handpiece assembly.

As illustrated in FIGS. **20**B and **20**C, the distal end **971** of the tip **970** can include an opening **982** through which fluids and/or other materials conveyed by the delivery stem **974** may exit. As shown, the opening **982** can be located at or near the center of the distal end **971** of the tip **970**. In other arrangements, a tip **970** can include additional stems **974** and/or openings **982**. In addition, the size, shape, location and/or other details of the openings **982** can be different than illustrated herein.

Moreover, the distal end **971** of the tip **970** can include one or more outlet openings **984** through which exfoliated skin, spent serums, other waste liquids, fluids and other materials and/or the like can be removed. In the embodiment illustrated in FIGS. **20**B and **20**C, the tip **970** includes two outlet openings **984**. However, more or fewer openings can be included, as desired or required. In addition, some or all of the posts or other protruding members **980** can be generally hollow so that they perform a similar function as other outlet openings **984** of the tip **970**. In other embodiments, however, some or all of the protruding members **980** are not hollow or do not include openings therethrough.

In some embodiments, once the distal end **971** of a tip **970** is positioned against the skin being treated, an enclosed space can be created between the skin surface and tip, generally along the interior of a peripheral lip member or other ridge. Therefore, as a vacuum or another suction source is generated in the handpiece assembly, exfoliated skin, spent serum, other fluids and/or other materials can be removed away from the tip **970**. At the same time, the delivery stem **974** of the tip **970** and any other conduit or space that is in fluid communication with it may also be subjected to a suction force. Consequently, serums, other fluids and/or other treatment materials can be advantageously transported to the distal end **971** of the tip **970** through one or more openings **982**. As discussed, the tip **970** or variations thereof can comprise any combination of treatment elements and/or abrasive elements, as desired or required by a particular application.

Additional details regarding tips for any embodiments of a handpiece assembly disclosed herein can be found in U.S. patent application Ser. No. 11/392,348 (filed on Mar. 29, 2006 and published as U.S. Publication No. 2007/0156124) and U.S. Provisional Patent Application No. 61/024,504 (filed on Jan. 29, 2008), the entireties of both of which are hereby incorporated by reference herein.

FIG. **21** illustrates another embodiment of a handpiece assembly **1000**. In some arrangements, the illustrated assembly **1000** may be particularly well-suited to be used as a shower model. For example, the tip **1020** of the handpiece assembly **1000** can include a dried serum or other material that is configured to dissolve when coming in contact with water and/or other fluids. Thus, once in contact with water, the tip **1020** can be operated to remove skin. For instance, water from a shower head can be used to dissolve the media situated on the tip **1020** of the handpiece assembly **1000**. In some embodiments, the handpiece assembly **1000** comprises an internal vacuum pump or other fluid transfer device (not shown) that is used to draw waste liquid and/or materials away from the tip **1020** toward one or more drains **1040**. Such drains **1040** may or may not be connected to a separate conduit or other collection device, as required or desired by a particular application.

With continued reference to FIG. **21**, the handpiece assembly **1000** can comprise a main body portion **1002** that a user can grasp and manipulate during use. In addition, the tip **1020** can be adapted to be removably positioned onto a raised mounting portion **1010** of the handpiece assembly. In other embodiments, however, the tip **1020** attached directly to the main body portion **1002** of the assembly **1000**.

As discussed herein with reference to FIGS. **20**B and **20**C, the tip **1020** can comprise an outer lip **1024** or other ridge member along its outer periphery. The lip member **1024** can generally define the periphery of the distal end of the tip **1020**. In some embodiments, when the tip **1020** is positioned against skin, the lip member **1024** inhibits or substantially inhibits fluids or other materials from escaping a space

generally defined between the tip **1020** and the adjacent skin surface. Further, the tip **1020** can include a plurality of protruding members **1030** positioned along its distal end and within the interior of the lip member **1024**. As discussed, the protruding members **1030** can be posts or other cylindrically-shaped objects. In some embodiments, the protruding members **1030** comprise relatively sharp edges, which can be configured to remove skin. The protruding members **1030** can have relatively sharp planing blades. Further, the tip **1020** can include one or more openings **1032**, **1034** through which treatment fluids, exfoliated skin, other waste materials and/or other substances may enter or exit the working surface of the tip **1020**. The size, shape, quantity, location, spacing and/or other details of the openings **1032**, **1034** can vary, as desired or required by a particular application or use.

In any of the embodiments disclosed herein, including the one illustrated in FIG. **21**, the tip of the handpiece assembly can be configured to rotate, pivot, tilt and/or otherwise move, as desired or required by a particular application.

FIG. **22** illustrates a charger or docking station **1050** which can be sized, shaped and configured to receive a handpiece assembly. It will be appreciated that any other embodiments of a handpiece assembly disclosed herein can be configured to be placed and stored in such a docking station **1050**. The station **1050** can include a cavity **1060** or other receiving area in which one or more portions of a handpiece assembly may be selectively inserted and removed. The station **1050** can be attached to a power cord **1070** or other power source so that a rechargeable battery located within the handpiece assembly can be charged.

Another embodiment of a skin treatment system **1100** comprising a handpiece assembly **1110**, a base member **1130** and a waste cartridge **1140** is illustrated in FIGS. **23** and **24**. As with other embodiments disclosed herein, the handpiece assembly **1110** can comprise a docking area in which a cartridge **1120** can be selectively removed or attached. In some arrangements, the handpiece assembly **1110** can be secured to a base member **1130** using one or more clips **1116**, holders or other members. The handpiece assembly **1110** can be placed in fluid communication with a waste canister **1140** using one or more conduits **1150**.

With continued reference to FIGS. **23** and **24**, the waste canister **1140** can be configured to be selectively attached to and/or removed from the base member **1130** for emptying, cleaning and/or any other purpose. In some embodiments, the waste canister **1140** comprises a lid **1142** or other cover member. As with any other embodiments disclosed herein, the base member **1130** and/or the handpiece assembly **1110** can comprise one or more buttons **1132**, **1134**, dials and/or other control members to regulate the operation of the skin treatment system. In addition, the base member can include a recessed region **1136** can enables one or more fluid conduits **1150**, power cables or other members to be conveniently coiled therearound. Further, the handpiece assembly **1110** can comprise a main body portion **1102** and a tip **1118** permanently or removably secured thereto.

According to another embodiment, a handpiece assembly can be configured to be used in a shower or in other wet or high moisture conditions. Thus, in some arrangements, the handpiece assembly is waterproof and/or water resistant. In such embodiments, the pump or other fluid transfer device can be driven by electrical power, by water pressure (e.g., one or more connections to running water), by pneumatic power and/or any other method or device. It will be appreciated that such alternative methods or devices of operating a pump or other fluid transfer device can be used with respect to any other embodiment disclosed herein.

Some or all of the embodiments disclosed herein can be particularly useful for less expensive and/or simpler microdermabrasion systems. In some embodiments, such systems can target the home consumer market.

In any of the embodiments described and/or illustrated herein, or variations thereof, treatment fluids and/or other materials can be delivered to the tip of a handpiece assembly using one or more ways. For example, in some embodiments, serums or other substances can be delivered through a supply canister or fluid bottle. Such serums, compositions, other fluids or substances can be pre mixed so that they are delivered to the tip and the skin unmodified or substantially unmodified.

In other embodiments, serums, fluids, gels or other materials can be in the form of a pack container dry granular material, viscous gels and/or the like. Such packs can be mixed with water or some other fluid by a user to a desired concentration. In other embodiments, one or more treatment materials can be impregnated or otherwise embedded into the tips of the handpiece assemblies. Thus, such materials (e.g., powers, solids, gels, etc.) can advantageously dissolve when they contact water, saline or some other liquid. In still other embodiments, the treatment materials can be contained within a capsule, tablet or other enclosure. Such enclosures can be configured to dissolve when placed in water or some other fluid. Therefore, in some embodiments, a user may be required to place a capsule, the contents of a pack or some other materials into a canister and add water or other fluid before use.

In some embodiments, one or more serums or other substances can be delivered to the treatment surface of a handpiece assembly to treat a particular skin condition. For example, the system can be used to treat acne, dry or oily skin, fine lines, sun-damaged skin, other skin diseases or disorders and/or like.

In some embodiments, the serums, other materials and/or a combination of such serums or other materials can be utilized for the treatment of substantially most or all skin types. For example, such serums and/or other materials can be used when the handpiece assembly exfoliates skin.

In another embodiment, the serums, other materials and/or a combination of such serums or other materials can be used during a follow-up (e.g., secondary, tertiary, etc.) or finish treatment step. For example, such serums and/or other materials can be used to hydrate the skin and/or lighten treat skin damage, either in lieu of or in addition to exfoliating skin. In such embodiments, the serums and/or other materials can comprise anti-oxidants, hyaluronic acid and/or the like.

In yet other embodiments, the serums, other materials and/or a combination of such serums or other materials can be used to target acne or oily skin conditions. It will be appreciated that other serums, other materials and/or combinations of such serums or other materials can be used to target one or more types of skin conditions or treatments. Further, a particular treatment procedure can utilize one, two or more of such serums or other materials during various treatment phases (e.g., exfoliation, finish or polishing treatment, etc.).

In some embodiments, one or more kits can be developed that target a specific type of user, skin condition, desired result and/or the like. For example, such a kit can comprise serums and/or other materials that target teenage acne. As discussed, the serums and/or other materials contained in such kits can be in one or more different forms, such as, for example, liquids, gels, other fluids, powders, solids and/or the like. In some embodiments, such serums and/or other

materials can be configured for immediate use. Alternatively, a particular amount of water, saline or other liquids, other dilution or dissolving agents and/or the like may need to be added to the serums and/or other materials to get them to a usable state.

In addition, depending on who the target user is (e.g., teenagers, adults, etc.) and/or how severe a particular condition is, the concentration or strength of the serums and/or other materials can be varied. For example, for younger users, a kit directed at acne treatment can comprise lower concentrations of serums and/or other materials. By way of another example, kits comprising higher concentrations or strengths of serums and/or other materials can be used to treat oily skin or acne in adults. In another embodiment, a kit can be developed to target users whose skin is generally typical (e.g., the users' skin is not abnormally dry or oily, the users do not have excessive amount of acne or scarring, etc.).

As discussed, the kits can include one, two or more different types of treatment combinations. For example, a kit can comprise a first combination of serum(s) and/or other material(s) that is intended to target the exfoliation of skin. The same kit may include a second treatment combination that can be used in a follow-up treatment to treat oily skin or the like. In other embodiments, however, a kit can comprise more or fewer treatment combinations, as desired or required by a particular skin treatment procedure.

The articles, devices, assemblies, systems and/or other items disclosed herein may be formed through any suitable means. The various methods and techniques described above provide a number of ways to carry out the invention. Of course, it is to be understood that not necessarily all objectives or advantages described may be achieved in accordance with any particular embodiment described herein. Thus, for example, those skilled in the art will recognize that the methods may be performed in a manner that achieves or optimizes one advantage or group of advantages as taught herein without necessarily achieving other objectives or advantages as may be taught or suggested herein.

Furthermore, the skilled artisan will recognize the interchangeability of various features from different embodiments disclosed herein. Similarly, the various features and steps discussed above, as well as other known equivalents for each such feature or step, can be mixed and matched by one of ordinary skill in this art to perform methods in accordance with principles described herein. Additionally, the methods which are described and illustrated herein are not limited to the exact sequence of acts described, nor are they necessarily limited to the practice of all of the acts set forth. Other sequences of events or acts, or less than all of the events, or simultaneous occurrence of the events, may be utilized in practicing the embodiments of the invention.

Although the invention has been disclosed in the context of certain embodiments and examples, it will be understood by those skilled in the art that the invention extends beyond the specifically disclosed embodiments to other alternative embodiments and/or uses and obvious modifications and equivalents thereof. Accordingly, it is not intended that the invention be limited, except as by the appended claims.

What is claimed is:

1. A system for treating skin, the system comprising:

a handpiece assembly comprising a tip along a distal end of the handpiece assembly, the tip being configured to contact a skin surface being treated;

a first canister configured to store at least one treatment material, wherein the first canister is configured to removably secure to the handpiece assembly; and

a second canister configured to store waste material removed from tip during use;

wherein an interior of the first canister and an interior of the second canister is each in fluid communication with the tip, so that the at least one treatment material can be selectively delivered from the first canister to the tip, and so that waste material can be selectively delivered from the tip to the second canister during use;

wherein each of the first canister and the second canister is configured to removably and directly secure to the handpiece assembly, such that the handpiece assembly, the first canister and the second canister form a generally unitary structure when the first and second canisters are secured to the handpiece assembly; and

wherein each of the first and second canisters is configured to be removed from and reattached to the handpiece assembly.

2. The system of claim **1**, wherein the second canister is configured to be placed in fluid communication with a vacuum or suction source.

3. The system of claim **1**, further comprising a fluid transfer device for transferring treatment material from the first canister to the tip, and waste material from the tip to the second canister during use.

4. The system of claim **3**, wherein the fluid transfer device comprises a vacuum or suction source that is placed in fluid communication with the tip of handpiece assembly.

5. The system of claim **4**, further comprising a power device configured to supply power to the fluid transfer device.

6. The system of claim **5**, wherein the power device comprises at least one of a battery or a power source configured to be coupled to a central power supply.

7. The system of claim **1**, further comprising at least one conduit configured to place at least one of the first and second canisters in fluid communication with the tip.

8. The system of claim **7**, wherein the at least one conduit is positioned, at least in part, within an interior of the handpiece assembly.

9. The system of claim **7**, wherein the at least one conduit comprises a first conduit and a second conduit, wherein the first conduit is configured to place the tip in fluid communication with the first canister, and wherein the second conduit is configured to place the tip in fluid communication with the second canister.

10. The system of claim **1**, wherein the tip comprises at least one abrasive element, the at least one abrasive element being configured to abrade skin when the tip is moved relative to a skin surface.

11. The system of claim **10**, wherein at least one abrasive element comprises at least one of: a protruding element, an abrasive material, a roughened surface, a contoured surface, a surface with at least one opening, a brush, a blade and a surface impregnated with diamonds.

12. The system of claim **1**, wherein the tip is removable from the handpiece assembly.

13. The system of claim **1**, wherein the tip comprises at least one treatment material positioned along at least one portion of the tip, the at least one treatment material being configured to at least partially dissolve when exposed to water or other liquid.

14. A system for treating skin, the system comprising:

a handpiece assembly comprising a tip along a distal end of the handpiece assembly, the tip being configured to contact a skin surface being treated;

a first canister configured to store at least one treatment material; and

a second canister configured to store waste material removed from tip during use;

wherein an interior of the first canister and an interior of the second canister is each in fluid communication with the tip;

wherein each of the first canister and the second canister is configured to removably and directly secure to the handpiece assembly, such that the handpiece assembly, the first canister and the second canister form a generally unitary structure when the first and second canisters are secured to the handpiece assembly; and

wherein each of the first and second canisters is configured to be removed from and reattached to the handpiece assembly.

15. The system of claim 14, further comprising a fluid transfer device for transferring treatment material from the first canister to the tip, and waste material from the tip to the second canister during use.

16. The system of claim 15, wherein the fluid transfer device comprises a vacuum or suction source that is placed in fluid communication with the tip of handpiece assembly.

17. The system of claim 14, further comprising at least one conduit configured to place at least one of the first and second canisters in fluid communication with the tip.

18. The system of claim 17, wherein the at least one conduit comprises a first conduit and a second conduit, wherein the first conduit is configured to place the tip in fluid communication with the first canister, and wherein the second conduit is configured to place the tip in fluid communication with the second canister.

19. The system of claim 14, wherein the tip comprises at least one abrasive element, the at least one abrasive element being configured to abrade skin when the tip is moved relative to a skin surface.

20. The system of claim 14, wherein the tip comprises at least one treatment material positioned along at least one portion of the tip, the at least one treatment material being configured to at least partially dissolve when exposed to water or other liquid.

* * * * *